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The NEW ZEALAND JOURNAL OF AGRICULTURE

Vol. 67. WELLINGTON, NOVEMBER 15, 1943. No. 5.

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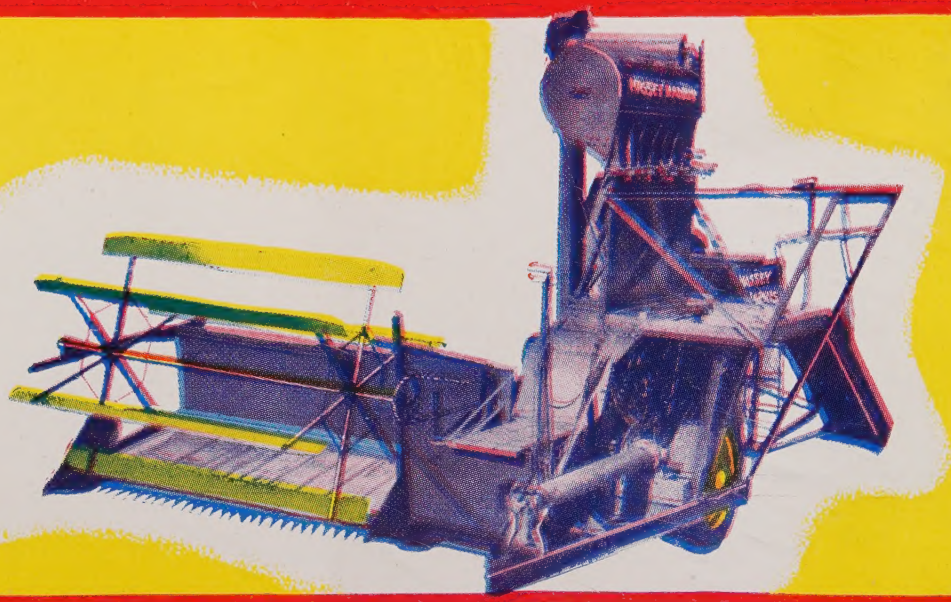

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THE NEW ZEALAND
JOURNAL OF AGRICULTURE

Vol. 67. No. 5.
November 15, 1943.
Wellington.

Published by direction of Hon. B. Roberts, Minister of Agriculture.

FERTILIZER SUPPLIES

Statement by National Council of Primary Production

An announcement that negotiations that had been proceeding between the Government and organizations overseas during recent months for increased supplies of phosphate rock were approaching results that should considerably improve the present position at a fairly early date has been made by the Deputy-Prime Minister, Mr. Nash. When those supplies did come to hand it appeared that the subsidy now being paid would reach £2,000,000. Mr. Nash added that during the present year the subsidy from War Expenses Account would be approximately £1,000,000.

"The National Council of Primary Production is perturbed at misstatements which have been appearing in the Press relative to fertilizer supplies, rationing and the manufacture of serpentine superphosphate," said Mr. Nash. At the last meeting of the council, he added, a sub-committee consisting of Messrs. Mulholland, Candy and Hale was appointed to submit a statement for consideration of the Government with a request that it be released to the Press. Its statement was as follows:—

REPORTS which have been appearing in various newspapers indicate to the National Council of Primary Production that there is considerable misunderstanding of the phosphate position in New Zealand and of what has been done in an endeavour to alleviate a very difficult situation.

In the first years of the war, increasing tonnages of phosphates were used, but as the effect of the war on overseas shipping and supplies became more intense, supplies of rock for New Zealand were considerably reduced until a point was reached where it was impossible to maintain the amount that was required. The National Council was forced to consider the best means of distributing the available supplies to the best advantage. A system of rationing had perforce to be introduced as from 1st July, 1941. With the entry of Japan into the war the following December, the situation rapidly deteriorated, and what had been regarded as a fairly severe restriction had to be made even more severe.

No Effort Spared

The Council has been kept fully informed of the position, and has constantly stressed the deterioration in production resulting from shortage of phosphates. It has urged that every effort be made to augment supplies, and cables which have passed between Governments, the British Phosphate Commissioners, and the Fertilizer Committee in London, clearly demonstrate that no effort has been spared in this connection. It is appreciated that the allocation and distribution of all available phosphates are determined by the London Fertilizer Committee acting in close collaboration with the British Shipping Committee, and, since the improvement in the Mediterranean situation, North African and Moroccan deposits have been under constant review.

Gafsa Phosphate

The Council is aware that enquiries have been made by importers relative to finely-ground Gafsa phosphate, but has endorsed the policy of first preference being given to high-grade rock which can be converted into fertilizer of approximately double the bulk of the original shipment. Information recently to hand indicates that the authorities in London recognise the urgency of increased supplies of fertilizer in the Australian and New Zealand production drive, and it is hoped that the position will be improved in the near future.

Proof By Experiment

With such short supplies, the Council had the great responsibility of endeavouring to make them give the maximum return possible. Experiments, which fortunately had made some progress when the emergency arose, showed reasonably clearly that a reverted superphosphate, made by the mixing of one part serpentine rock to three parts of superphosphate, gave as good, and in many cases better,

Members of the National Council of Primary Production

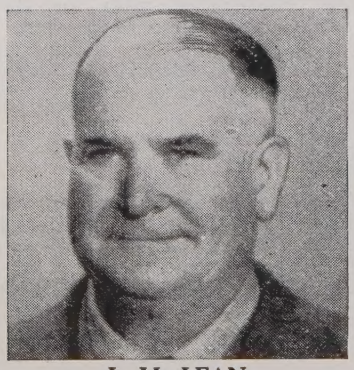
W. W. MULHOLLAND,
President, N.Z. Farmers' Union.

R. A. CANDY,
Chairman, N.Z. Dairy Board Herd Recording Council.

W. E. HALE,
Chairman, N.Z. Dairy Board.

HON. R. EDDY, M.L.C.,
President, N.Z. Workers' Union.

L. J. WILD,
President, N.Z. Royal A. and P. Society.



L. MacLEAN,
N.Z. Sheep Owners' Federation.

D. S. ROSS,
Past President Young Farmers' Clubs.

R. W. KEBBELL,
Wairarapa Primary Production Council.

A. J. DAVEY,
South Canterbury Farmers' Union.

E. A. CAMERON,
Southland Farmers' Union.

results than a similar weight of straight superphosphate. In other words, it would increase the effective value of the available supplies of phosphate rock by 33 1-3 per cent.

In view of the serious effects to be expected from the short supply of phosphatic fertiliser, and the great national benefit of such a material increase in the effective supplies, the Council recommended that all manufactured phosphatic fertiliser be in the form of serpentine superphosphate. Further experiments which have been carried out since that decision was made fully confirm the original conclusions.

Standards Fixed

The Council admits that a quantity of this fertiliser has been supplied to farmers in an unsatisfactory condition in that coarse material was included and proper reversion did not take place. Strong action was taken to correct this, but it was found that there was difficulty with some manufacturers in obtaining immediately some of the equipment necessary to make a thoroughly satisfactory article. To ensure uniformity in future, regulations have now been gazetted enforcing minimum standards of quality and grinding.

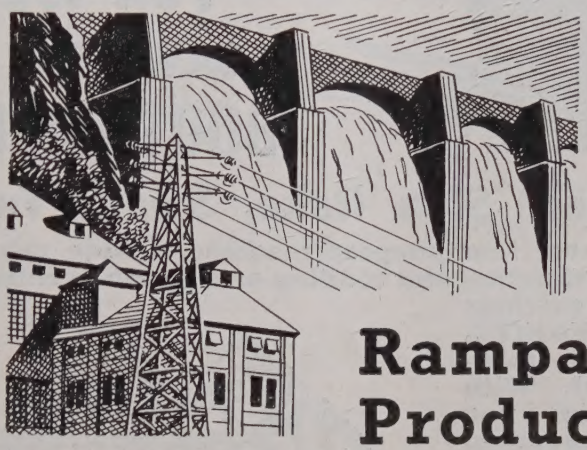
The Council recognises its great responsibility in regard to the control of the supply of available fertilizers in order to serve the national interest. It has had to make decisions which may have been unpalatable to some farmers, but despite regulations which have been introduced in regard to fertiliser control, it is gratifying that the farming community has responded so well in the production programme.

Soil Fertility

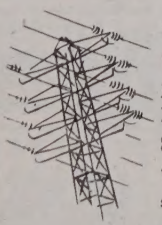
NEXT to defending one's country from aggression is the duty to maintain it in good fertile condition. The food of the people comes from the soil or the sea, and, however wonderful the inventions of the present day, their life and health depends on the quality and quantity of this supply.

To many people the soil is just dirt; but to the true agriculturist it is a mixture of mineral and organic residues in a state of combustion by means of fermentation and oxidation, in which crops flourish with the assistance of light, warmth, and moisture. Quite a small deficiency in the soil mixture may have serious effect. For instance, 5 ounces cobalt to the acre may make all the difference between health and disease in cattle through the quality of the pasture; or 20 lb. borax to the same area the difference between a healthy or useless crop of roots; a bacterial culture in a 4-ounce bottle may make all the difference between failure and success in establishing a flourishing crop of lucerne.

A close study of this difficult medium has always been made; but in a new country under intensive cropping the problems are being rehearsed in the light of modern science and commerce. **"Soil Fertility, Basis of Healthy Living,"** by J. W. Matthews, published by A. W. & A. H. Reed, is a manual containing a summary of the latest science and practice on this vital subject. Clearly written, well printed, and strongly bound, it is an excellent text book for the practical man in the home garden, farm homestead, or any agricultural enterprise.—**W.C.H.**



Ramparts of Production



New Zealand's great enterprise in developing hydro-electric works has proved an invaluable war-time asset. These modern power-producing plants are ramparts of our war industries. By wisely investing the funds paid in by its members, the A.M.P. Society has helped very substantially in providing the finance that has made possible the development of hydro-electric schemes and other public works.

The A.M.P. Society takes a natural pride in the fact that, over the years, its members (who own it) have so built up its strength that it now has nearly ***£15,000,000*** invested in New Zealand National and Local Government Loans. In addition it has placed at the Government's disposal for ***War purposes*** nearly ***Three Million pounds in New Zealand.*** The Society has now lent over ***£51,000,000*** to the Australian and New Zealand Governments and is adding to this total about ***£500,000*** every month.

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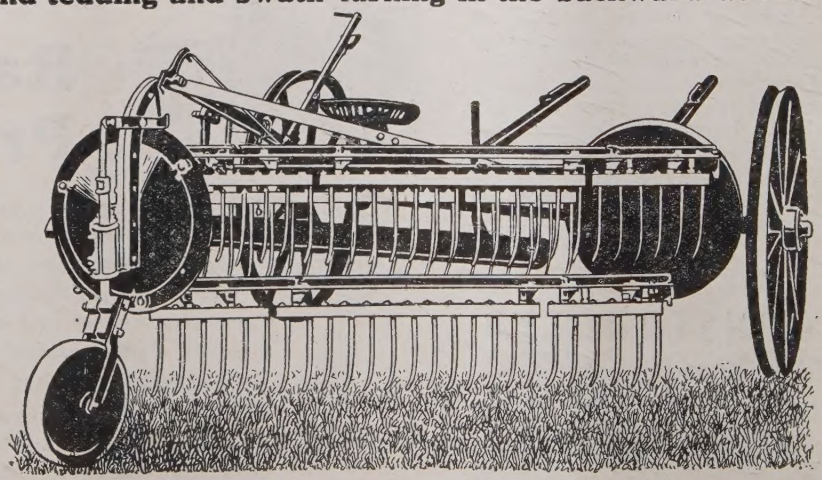

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World's Food Problems

44 Countries in Conference

Better nutrition is a first step toward greater well-being for all peoples of the world, and is a first concern of governments everywhere. This was the most important conclusion reached at the United Nations' Conference on Food and Agriculture.

"THE first task is to complete the winning of the war and to deliver millions of people from tyranny and hunger. During the period of critical shortage in the aftermath of the war, freedom from hunger can be achieved only by urgent and concerted efforts to economize consumption, to increase suply, and to distribute to the best advantage.

"Thereafter we must equally concert our efforts to win and maintain freedom from fear and freedom from want. The one cannot be achieved without the other."

The above declarations are points 1 and 2 in a seven-point statement made by the United Nations' Conference on Food and Agriculture, held in Virginia, U.S.A., in May and June of this year. It was attended by the representatives of forty-four countries, including New Zealand.

For dealing with the many aspects of the great problems involved, the conference worked in four sections—on consumption, production, distribution, and future organization, respectively—which met more or less simultaneously. The first three sections were further divided into eleven committees, and representatives of all countries sat on every committee. Meeting in the midst of the greatest war ever waged, and in full confidence of victory, the conference declared its belief that the goal of freedom from want of food, suitable and adequate for the health and strength of all peoples, can be achieved.

Poverty Causes Hunger

"There has never been enough food for the health of all people," adds the declaration of the conference. "This is justified neither by ignorance nor by the harshness of Nature. Production of food must be greatly expanded; we now have knowledge of the means by which this can be done. It requires imagination and firm will on the part of each government and people to make use of that knowledge.

"The first cause of hunger and malnutrition is poverty. It is useless to produce more food unless man and nations provide the markets to absorb it. There must be an expansion of the whole world economy to provide the purchasing-power sufficient to maintain an adequate diet for all. With full employment in all countries, enlarged industrial production, the absence of exploitation, an increasing flow of trade within and between countries, an orderly management of domestic and international investment and currencies, and sustained internal and international economic equilibrium, the food which is produced can be made available to all the people.

"The primary responsibility lies with each nation for seeing that its own people have the food needed for life and health. Steps to this end are for national determination. But each nation can fully achieve its goal only if all work together.

"We commend to our respective governments and authorities the study and adoption of the findings and recommendations of this conference, and urge early concerted discussion of the related problems falling outside the scope of this conference.

"The first steps toward freedom from want of food must not await the final solution of all other problems. Each advance made in one field will strengthen and quicken advance in all others. Work already begun must be continued. Once the war has been won decisive steps can be taken. We must make ready now."

New Zealand Aspect

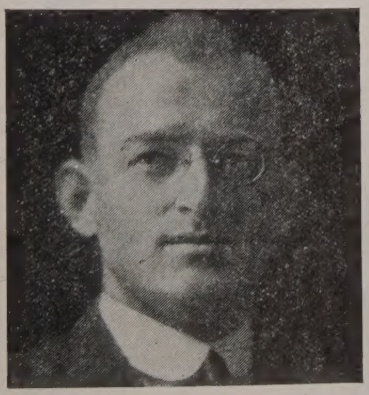
To this Dominion, the conference was of first-rank importance, and, accordingly a strong delegation was sent. It included Dr. R. M. Campbell, official secretary to the High Commissioner's Office, London, who was chairman of the delegation, Mr. G. A. Duncan, Director of the Export Division of the Marketing Department, and Mr. E. J. Fawcett, Director-General of the Department of Agriculture.

The memorandum submitted to the conference by the New Zealand delegation contains many points of particular interest to farmers of this country.

"New Zealand," says one point in the memorandum, "has progressively

THE NEW ZEALAND DELEGATION

MR. G. A. DUNCAN.



DR. R. M. CAMPBELL.

MR. E. J. FAWCETT.

increased her farm production for export, mainly in butter and cheese, lamb, mutton and beef, wool, fruit, and other products. Given suitable conditions for their production and sale, we can continue to increase the output of these and other commodities; our delegation can provide, as required, details of potential outputs. Exports represent a very large proportion of New Zealand's total production, in the case of some commodities over 90 per cent., and virtually all our exports are farm products; to them our whole economy is largely geared. We have shared the common experience of disastrous price-fluctuations in agricultural products, and our Government introduced in 1936 the principle of guaranteed prices for the purpose of giving security to individual producers and enabling them to plan for the future with confidence. Experience has shown that we should adapt them to the solution of post-war problems. Planned increases in production will be difficult to achieve unless based on stability of market and value."

Handling of Wool

"We raise for consideration," says a further paragraph of the memorandum, "the question whether the permanent organization to be set up might not appropriately be confined to foodstuffs, leaving, for example, wool, cotton, and related products to be covered by a separate suitable organization; the body now contemplated, such as the International Food Office, to be integrated later with any other parallel commodity organizations in an international economic authority.

"Because of the exclusive concern of this conference with farm products, we feel it necessary to record our sense of one danger to be guarded against. Plans to increase farmers' output, well-founded as these may be in themselves, may not be duly balanced by needed expansion in industrial production. Such a neglect could worsen, rather than improve, the position of the farmer, changing to his disadvantage the real terms of exchange between what he sells and what he buys. In its wide implications, this is an issue beyond the scope of the present conference; it is not, we think, a matter that can be neglected by governments."

Permanent Organization

The blue-print finally drafted by the conference contained a recommendation that a permanent international organization be established in the field of food and agriculture. Until the functions of this organization are formulated for consideration by the governments of the many countries concerned —representatives of 44 attended the conference—an interim commission is carrying on from Washington. On it, New Zealand is represented by the Minister at Washington, the Hon. W. Nash, or in his absence, by the Charge d'Affaires of the New Zealand Legation, Mr. Geoffrey Cox.

Draft regulations have been adopted, and three committees are dealing, among other things, with plans for the permanent organization.

Reduced to the simplest terms, the conference blue-print calls for enough of the right kinds of food being made available for all the people according to their needs.

"To civilized people," says an American authority, "this request seems so right, and so logical, that it is a wonder we have never really tried to comply with it before. Recognition that better nutrition is a realizable goal is the first step towards a healthier world."

Starving Europe

The conditions that will be revealed in starving Europe when the Continent is invaded — conditions which New Zealand as a food-producing country will have some hand in remedying— were envisaged by an American in a broadcast after the conference. The speaker, who was no less an authority than Mr. Paul H. Appleby, Under Secretary of Agriculture of the United States, said that the conditions would be similar to those encountered in North Africa, where the German occupation had caused such an impoverishment of the people that they were at about the lowest possible point in their supply situation, and provisions had to be rushed to the scene. The primary reason for sending supplies abroad was not alone a matter of humanitarian sentiment; in the first instance, it was military necessity.

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Internal Parasites in Poultry

Mortality and sickness among poultry of all ages due to internal parasites such as worms, is becoming distressingly common, and greater attention will have to be paid by poultry keepers to guard against future losses. It would be safe to assume that these parasites infest almost every flock of poultry in the Dominion to a greater or lesser degree and are more responsible for unthrifty flocks and low egg yields than any other cause.

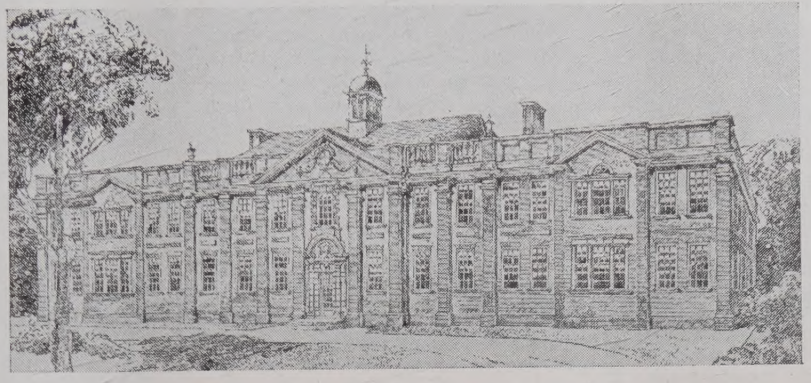
"Internal Parasites in Poultry" is the subject of a special bulletin issued **free** by the Department of Agriculture. This bulletin deals with the various types of worms and gives methods of treatment. Write to the Department of Agriculture, Auckland, Wellington, Christchurch or Dunedin for a copy.

Manures

are vital to the success of your garden crop. A free bulletin on "Manures and Manuring for Garden Crops" may be obtained from the Department of Agriculture.

ROTHAMSTED CENTENARY

1843

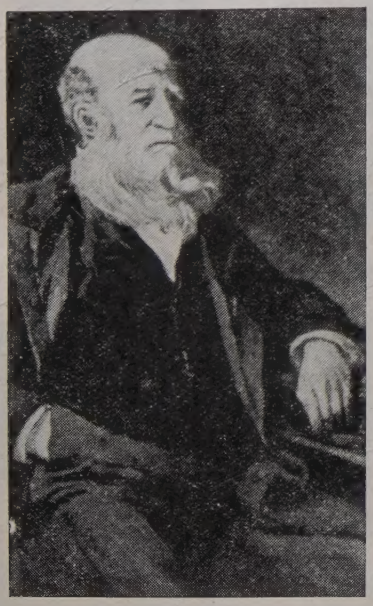


1943

Century's Service to Agricultural Science

THE Rothamsted Experimental Station, Harpenden, England, is the oldest and most famous agricultural research station in the world. Its centenary is a landmark in the progress of world agricultural research, and the century under review covers the establishment and development of New Zealand's farming industries. Much of our progress in farming has been due to agricultural research, the foundations of which were laid at Rothamsted.

The Rothamsted Experimental Station was founded by John Bennet Lawes in 1843. He had associated with him for the first sixty years of Rothamsted development, Joseph Henry Gilbert, and the names of Lawes and Gilbert are synonymous with the establishment of agricultural research. They devoted themselves to the solution of fundamental scientific problems and thus provided a basis for the ordered development of worldwide agricultural research. Lawes died in 1900 and Gilbert in 1901, and the station was directed by A. D. Hall from 1902 to 1912 and John Russell from 1912 to 1943. As the names of Lawes and Gilbert are associated with the important progress of the 19th century, so are the names of Hall and Russell associated with the work of the 20th century. Both have a very definite place in British and Empire agriculture. Sir John Russell visited New Zealand for a few weeks in July-August, 1928, and this contact with Rothamsted was of great value to research workers in this country. His book, "Soil Conditions and Plant Growth," is the standard work on this subject in the Empire, and our soil research in New Zealand received a valued stimulus from Sir John's visit. Sir John's tenure of the directorship of Rothamsted ended with the centenary and he is now to devote himself to a greater task—that of directing the restoration of Europe's devastated agriculture.



Sir Joseph Henry Gilbert, F.R.S.
(From painting by F. O. Salisbury, R.O.I.)

The outstanding contributions of Rothamsted to agriculture and agricultural research methods have been the foundation of the British fertilizer industry, the establishment of sound statistical methods in the solution of research problems, the formulation of sound techniques for field experimentation and the development of soil physics and chemistry, soil microbiology and plant pathology and the establishment of the Imperial Bureau of Soil Science. The summarised details of these and other contributions to agricultural science are given in a Centenary booklet, "Rothamsted—The Work and History of Its Departments," from which has been extracted the accompanying note on the origin of the superphosphate industry.

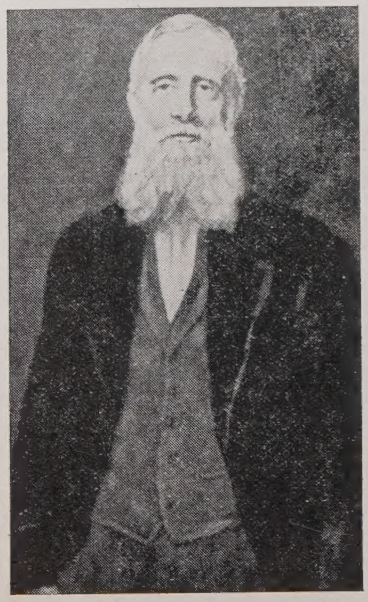
"Throughout its whole history, the purpose of Rothamsted has remained unchanged: to develop an agricultural science that experts and teachers could use in their daily work and that would stimulate good farmers to think and so devise new and better methods of agricultural practice."

Sir Daniel Hall, K.C.B., F.R.S.

SUPERPHOSPHATE

"FROM his boyhood Lawes was keenly interested in chemistry. He fitted up a laboratory in a bedroom, but this did not long suffice; later he converted a barn into a laboratory. He did not at first link up farming with chemistry till a chance remark of a neighbour, Lord Dacre, aroused his interest: 'Bones,' Lord Dacre said, 'are very good fertilizers on some soils, but not on my land nor on yours. Why is this?' Lawes knew that bones contain calcium phosphate which was presumably the substance responsible for the crop increases; he knew also that the calcium phosphate was insoluble in water and therefore not easily absorbed by plants, and he knew too that if the bones were treated with sulphuric acid the phosphate would become soluble and therefore presumably more easily available. Experiment showed that this was so: acidulated bones succeeded where untreated bones failed. Bones, however, were very costly. Fortunately mineral calcium phosphate was then becoming obtainable; great natural deposits were found in various countries. In the raw state Lawes found it ineffective, but after being treated with sulphuric acid it became a good fertilizer of special value for turnips because it hastened their development and pushed them quickly through the first stages of growth, during which they were particularly liable to the attack of the flea beetle, then, as now, a serious pest. He patented the process in 1842, set up a factory for making the 'superphosphate' as chemists called it and so founded the great artificial fertilizer industry."

Sir John Russell, D.Sc., F.R.S.



Sir John Bennet Lawes, Bart., F.R.S.
(From painting by Sir Hubert von Herkomer, R.A.)

Interior of the first laboratory at Rothamsted, a converted barn where superphosphate was first made.

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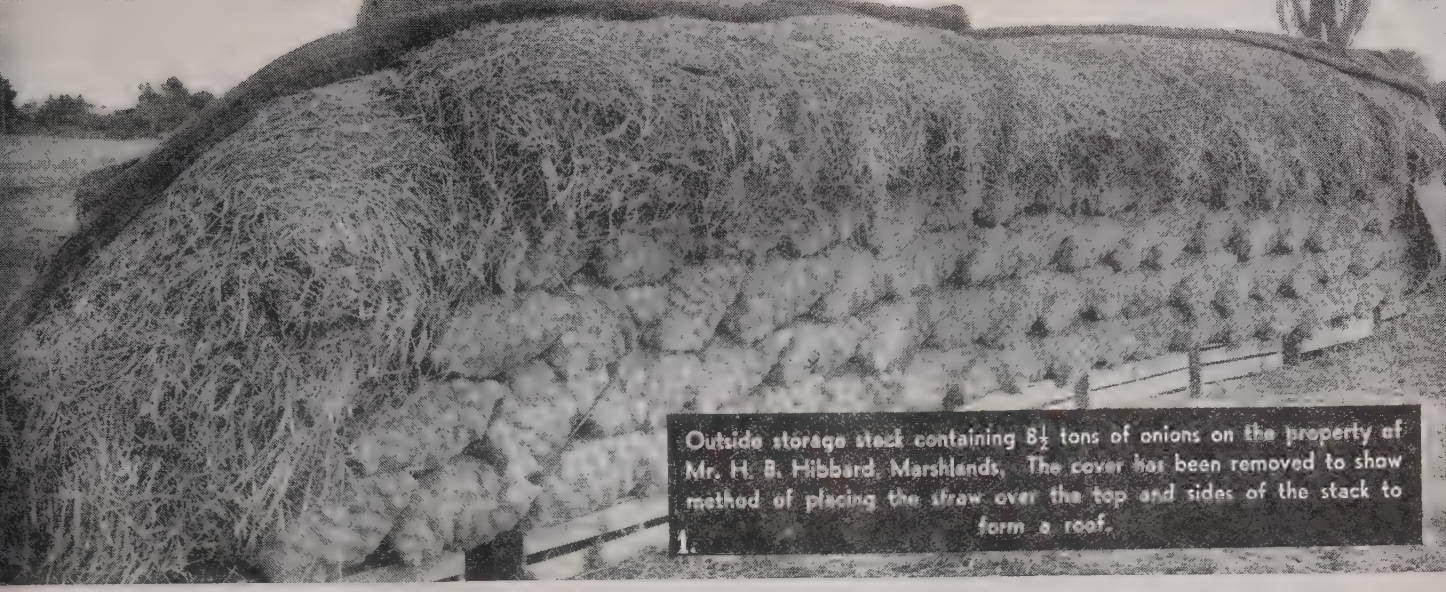


Outside storage stack containing 8½ tons of onions on the property of Mr. H. B. Hibbard, Marshlands. The cover has been removed to show method of placing the straw over the top and sides of the stack to form a roof.

1.

STORAGE OF ONIONS

AS the storage of greater quantities of onions will require to be undertaken by growers in the coming season, this article has been prepared with a view to drawing attention to the most important factors in their successful storage when they are being held under ordinary storage conditions on the grower's farm.

IN THE coming season producers are increasing their acreage under onions in an endeavour to supply the requirements of the fighting forces. Additional storage facilities will be required on growers' farms in order to regulate the marketing of supplies throughout the season.

Selection for Storage

The following important points should be taken into account when the storage of a portion of the crop is contemplated:—

1. The selection of that portion of the crop which is of good keeping quality. For this purpose onions should be firm, sound and free from disease. The Turbott or Pukekohe Longkeeper variety is recommended.

2. Onions when matured should be carefully lifted, and the tops and roots well dried off in the field in wind-rows. Careful handling when lifting is essential to prevent injury to the onions, as blemished or bruised bulbs are susceptible to the invasion of organisms which result in the development of rots and moulds during storage.

— By —

A. A. POWELL,

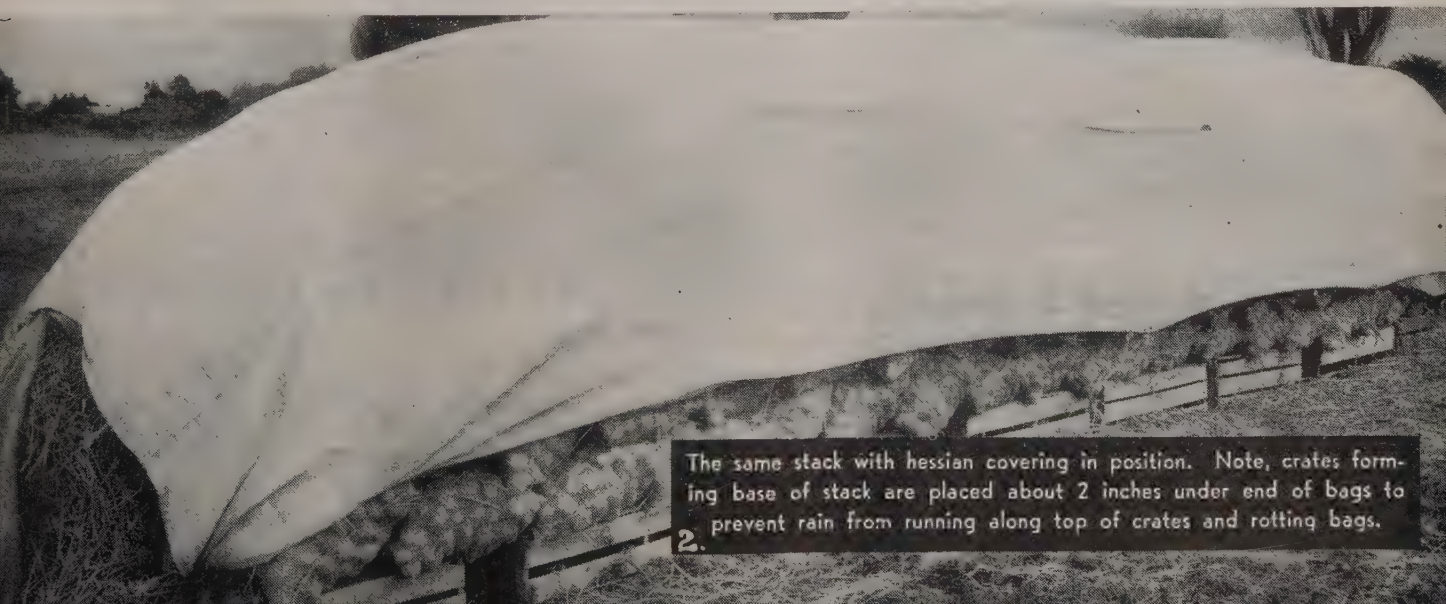
Cool Storage Officer, Wellington

3. The elimination during harvesting or directly following of faulty, diseased or thick-necked onions will go a long way in minimising losses during long storage.

Storage

The conditions which are essential in obtaining the best results over a long period of storage may be stated as follows:—

1. The onions should be carefully handled during harvesting and stacking in storage.



The same stack with hessian covering in position. Note, crates forming base of stack are placed about 2 inches under end of bags to prevent rain from running along top of crates and rotting bags.

2.

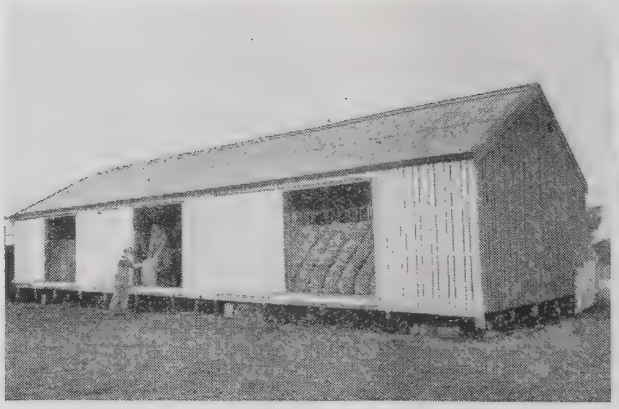


Fig. 3—Left: Onion storage shed on the property of Mr. H. B. Hibbard, Marshlands. *Fig 4—Right:* Interior view of same shed showing open slatted floor and sides of shed, and method of stacking cental bags of onions for storage.

2. Storage crates are recommended for stacking onions in storage, as they remove weight from the stacked onions and increase the storage capacity of the shed by permitting high stacking. When crates are properly stacked for storage a better distribution of the air movement throughout the shed and the stacked onions is possible. Air movement throughout the stacks will prevent moisture from building up to the saturation point in the atmosphere surrounding the bulbs. If excess moisture is present it will condense on or about the bulbs. Damp storage conditions are detrimental, as they bring about the early deterioration of stored onions from rot development, root growth and sprouting. Dry storage conditions are essential to obtain good results from onion storage.

3. During storage onions should not be exposed to direct sunlight, as this may have the effect of promoting early sprouting of the bulbs.

In this country storage is carried out by growers on their farms, and the two methods mostly favoured are (1) shed storage, (2) outside storage. They may be described as follows:—

Shed Storage

Many growers in Canterbury have used sheds for storage in past years; but recently sheds of special design and construction have been erected for onion storage. The floor level of these sheds is from 2 in. to 3 in. above the ground to provide ample space for air movement under the shed and upwards through the open spaced or slatted flooring. The flooring timber,

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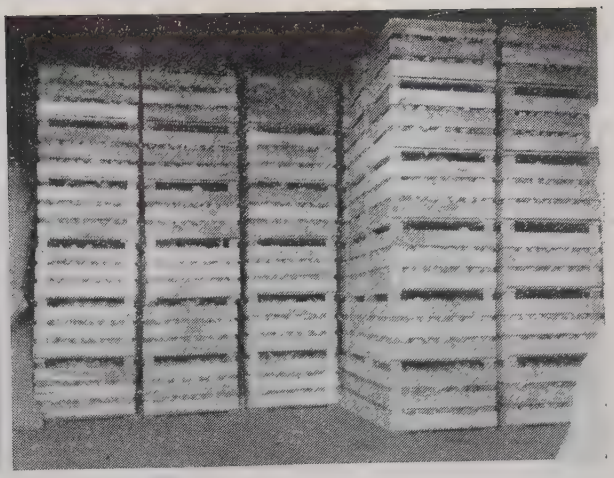

Fig. 5—Left: The heat storage experimental chamber is at the extreme right of this onion storage shed on the property of Mr. D. A. McFadden, Marshlands. *Fig. 6—Right:* Method of stacking the special storage crates in this shed.

consisting of 6 in. by 1 in., is spaced approximately 1 in. apart to distribute air movement vertically throughout the stacks of stored onions. Vertical battens are placed on the sides of the sheds. These battens are also spaced ½ in. to 1 in. apart to provide additional air movement within the shed. The main feature of this kind of shed storage construction is to obtain the maximum drying effect throughout the shed by utilising the prevailing winds to dry and maintain the stored onions in as dry a condition as possible during the storage period.

Dimensions and Capacity of Storage Shed: A storage shed with dimensions 68ft. by 24ft. and 8ft. stud should have a capacity of approximately 90 tons of onions stacked in cental bags, or 145 tons in crates. The shed shown in Fig. 3 is the property of Mr. H. B. Hibbard, a successful onion-grower of Marshlands, Canterbury. An interior view of Mr. H. B. Hibbard's storage shed showing the open spaced timber on the walls and floor is depicted in Fig. 4. The cost of a shed of this description is in the vinicity of £225.

Storage Crates for Stacking Onions in Shed Storage: Strongly-constructed, well-ventilated storage crates are a sound investment for stacking onions in shed storage. Crates having inside dimensions of 19¼ in. by 15¼ in. by 10½ in., with corner posts extending 1½ in. above the sides, may be recommended. The corner posts may be red pine or *Pinus insignis* timber. The timber forming the sides of the crate is 3 inch by 3/8 inch *Pinus insignis* spaced 1¼ in. apart. The crate will hold approximately 60 lb. of onions, and the cost is about 1/8 per crate in shooks, or 2/4 made up (Note the method of stacking the crates for storage shown in the illustration of the interior of Mr. A. D. McFadden's storage shed at Marshlands.)

Stacking Crates in Shed Storage: When stacking crates in storage 2 in. of air space should be provided between each row of crates, and finger room, or ½ in. should be left between each tier of crates.

Method in Use for Stacking Cental Bags in Shed Storage: The bags are stacked one on top of another in single rows, two bags placed in a vertical position one on top of the other, and the third bag placed horizontally on top. In order to ensure good ventilation 4 in. to 6 in. of air space should be left between each row of bags throughout the stacks.

Outside Storage

This method of storing onions has been largely used by growers in Canterbury for many years, and stacks of over 80 tons have been used during the past seasons, good results having been obtained from storage when seasons are favourable for onion production and the bulbs are of good keeping quality and comparatively free from disease. High, dry ground should be selected as a site for an outside storage stack. Baled straw is used by some growers to form the base of these stacks. The bales are placed on their flat, three bales wide, placed length-wise across the width of the stack and open spaced. The first layer of cental bags is placed on the base lengthwise across the width of the stack, with the mouth or top of the bags facing inwards. The outside ends of the bales of straw forming the base of the stack should be about 2 in. under the ends of the bags forming the outside of the stack, in order to prevent rain from striking the crates or baled straw and penetrating under the bottom layer of bags. This precaution will prevent the bottom of the bag from becoming wet and subsequently rotting. If baled straw is not available to form the base of the stack, timber may be used; but care should be taken to see that only perfectly dry timber is used, as green or

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damp timber may rot the bags with which it comes in contact.

Method of Stacking Cental Bags in Outside Storage: It is important that the stacks should not be more than two bags placed lengthwise across the width of the stack. The ends of the stacks should be carefully constructed in order to stabilise the stack. In some stacks the bags may be crossed in alternate layers. The height of the stack should be from four to five layers, with a single bag placed on top lengthwise to the stack in order to assist in rounding off the top of the stack to run off the rain when the stack is covered with straw and a hessian covering. The outside storage stack shown in Fig. 1 contains 8½ tons of onions. In Canterbury these stacks have contained from 80 to 100 tons.

In order to permit the sun to assist in maintaining dry conditions on both sides of the stacks, they are usually constructed running north and south, so that one side of the stack is exposed to the morning sun and one side to the drying effect of the afternoon sun's rays. Outside storage stacks are frequently placed under trees or hedges as a protection from driving rain.

Covering Top of Outside Stack: When stacking is completed, 1 ft. of dry straw is placed over the top of the stack and domed off and brought over both sides of the stack to form a well-sloped roof, which is then covered with a strong hessian covering brought well over both sides of the stack and firmly tied down to saplings placed horizontally. These saplings are nailed to the top of pegs driven into the ground, the top of the pegs being about 1 ft. above ground level and about 3 ft. from the edges of the stack. Empty sacks may be opened up and sewn together to make a covering for the stacks. It is important that rain should be run off the stacks; therefore the top of the stacks should be specially shaped for this purpose.

Summary

1. A careful selection of onions for storage is essential to minimise losses.

2. Care should be taken in lifting the bulbs and in handling during harvesting and stacking in storage to prevent bruising.

3. Onions require dry storage and atmospheric conditions from the time of lifting during storage and marketing right to the point of consumption.

4. Weather conditions are rarely favourable for thoroughly drying the skins and necks of the bulbs in the field; therefore dry, well-ventilated storage conditions are essential.

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(P.A.) WHANGAREI, September 18.

A relaxation of the restrictions on the use of steel in the manufacture of concrete fencing posts was announced by the Minister of Supply, the Hon. D. G. Sullivan. The restrictions had been imposed under the Iron and Steel Control Order of 1942.

"The position is that for some time past the use of reinforcing steel in the manufacture of concrete fencing posts has been entirely prohibited," said the Minister. "However, a quantity of rerolled steel has now been received in this country from the United States, and an examination of the controls operating in that country reveals that the use of this type of steel is permitted in the manufacture of fencing posts for agricultural purposes. It has been arranged, therefore, that this type of reinforcing steel may now be used for similar purposes in the Dominion."

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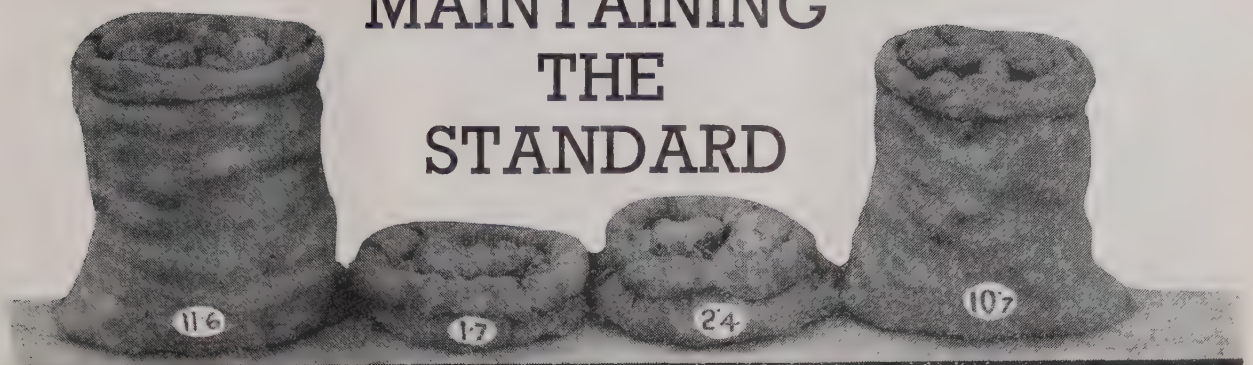
MAINTAINING THE STANDARD OF CERTIFIED SEED POTATOES



Illustrating how virus can affect crop yield. The figures represent tons per acre of table potatoes. The two inner samples are from virus infected lines, while the two outer samples are from healthy stock.

THE value of the potato in supplying a considerable share of the nation's foodstuffs is well known. What is not so generally known, however, even to many commercial potato growers, is the attention and care necessary on the part of those growers who specialise in the production of seed stocks, in order to maintain the high standard of quality required of certified seed potatoes.

— By —
K. COTTIER,
Assistant Instructor in Agriculture, Invercargill.

THE two main points of consideration in determining the value of seed potatoes are:—

1. **Varietal purity,**
2. **Freedom from virus diseases.**

Seed potatoes when certified have reached a high standard in respect of each of these points, and in producing further crops from certified seed, real skill and knowledge are required to maintain, and if possible, improve this standard. The potato is a plant which will deteriorate rapidly unless proper methods of looking after it are employed.

Varietal Purity

This is the power of seed-tubers to produce crops true to name. Crops should be typical of what is expected from the variety name, in order that uniformity of the crop in all respects may be obtained.

Plants in a crop which are not typical of the variety are called "rogues," and the operation of removing them is called "roguing." These plants may be of a distinct variety or they may be off-type plants such as "bolters." Their presence may be due to such causes as accidental mixing of seed-lines before planting, but frequently it is due to incomplete roguing of the crop from which the seed was produced.

Rogues should be removed from the growing crop, together with all their tubers, for these tubers will reproduce true to their own type, and should therefore be regarded as an undesirable contamination. The detection of rogues is not always easy, success depending on training the powers of observation to differentiate the rogue, which may differ little in appearance from the variety being cropped. Approximately flowering-time is a good time to rogue, for at this stage detection of such differences as flower-colour, earliness or lateness of maturity, habit of growth and foliage, is most easily undertaken.

The importance of removing foreign varieties is well illustrated in the case of Northern Star being present as a rogue in Arran Chief. The tubers of these varieties are similar in appearance, but Northern Star has a faint pink spot in the eye. Northern Star typically produces numerous but small tubers which are thus liable to be included in any seed saved from the crop. Thus, the rogue would tend to increase in subsequent seasons. Northern Star is much inferior in cooking quality to Arran Chief, which

Plants showing virus disease. *Left:* Mosaic may be distinguished by a mottling and crinkling of the leaves which are smaller than those of a healthy plant. When the plant is shaded from the sun the mottling becomes more evident. In severe attacks the whole plant appears pale in colour on account of the pronounced mottling. *Centre:* A healthy plant. *Right:* The lower leaves of the leaf-roll infected plants are seen to be rolled upwards and become funnel-shaped. The leaves are harsh and brittle to the touch. Infected plants generally are smaller and the foliage of a lighter colour.

Line of potatoes (centre row) badly "run out" with leaf-roll. Such plants are a menace to healthy plants around, and to healthy crops in the neighbourhood, infection being spread in the field by insects such as green aphis.

may suffer undeservedly in reputation because of the presence of the foreign variety. The Northern Star plant is in general appearance denser, and has smaller and more pointed leaflets than Arran Chief. The plants can be readily identified in the field by the experienced grower. If seed is set out to sprout, Northern Star can be identified by its pink sprouts as compared with the purple sprouts of Arran Chief.

Off-types like bolters are readily identifiable and are frequently seen in the variety King Edward. They are characteristically much taller and much later than the true variety, and frequently produce abundant flowers. Bolters reproduce true to type, and should be removed, together with all their tubers, from the crop.

Virus Diseases

In contending with deterioration of potato stocks, one of the greatest difficulties is to overcome virus diseases. The most important virus diseases are known as leaf-roll and mosaic—the latter really consisting of several similar forms of disease. These diseases are caused by agents, the exact nature of which is not precisely known; but it is known that these agents are extremely minute—much smaller than bacteria—and that when they are introduced into the sap of the potato plant they cause the symptoms of virus disease to appear. Different viruses produce their own particular symptoms, by which they may be recognised.

The transmission of virus disease from an infected plant to a healthy one depends on the introduction of infected sap from the former into the sap of the latter. This may be done by a number of agents, the principal being the sap-feeding insect known as the aphis. Once the virus is in the sap it spreads throughout the plant, affecting all tissues, including the tubers, which carry the virus across the gap from one season's crop to the next. In this way the disease is perpetuated and increased.

The effect of virus disease is to reduce the vigour of the plant, and consequently the yield. In bad cases of infection practically all the tubers harvested are no larger than seed-size. Infected tubers cannot be detected by appearance. They may be

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perfectly formed, of good shape, and apparently healthy, and yet carry virus disease. The only way to approach the virus disease problem is to recognise the affected plants in the crop, and remove them, together with all their tubers. The symptoms of virus disease appearing in the foliage differ slightly from variety to variety, and the main virus diseases may be described in general terms as follows:—

Leaf-roll: In this virus the lower leaves are rigid, the leaflets thickened and harsh, and rolled upwards and inwards, making the leaf funnel—or spoon-shaped. The rolled leaflets are crisp and dry, and rustle when the plant is disturbed. When a healthy plant becomes infected during the growing season there may be no visible sign of infection, but occasionally a stiff, upward rolling of the topmost leaves takes place, extending progressively to the lower ones. Other diseases, particularly stem troubles, are the more usual cause of the upper leaves curling, but stem troubles are usually accompanied by a certain amount of wilting. In leaf-roll the sett is not generally exhausted.

Mosiac: Instead of being uniformly green, the leaflets are mottled with pale green patches. This condition is most easily recognised if the plant is shaded from the direct rays of the sun. In severe cases the foliage becomes paler, the growth more open, and the leaves very much wrinkled or the margins of the leaflets waved.

Roguing to remove virus disease-infected plants should commence early in the season, about six or eight weeks after planting, and should be repeated at intervals. The earlier the diseased plant is recognised and removed, the shorter the period it remains a potential source of spread of the disease. All such plants, together with all their tubers, should be removed right away from the crop. Spread of the diseases takes place most rapidly in the latter stages of growth when aphis infestation is at its height.

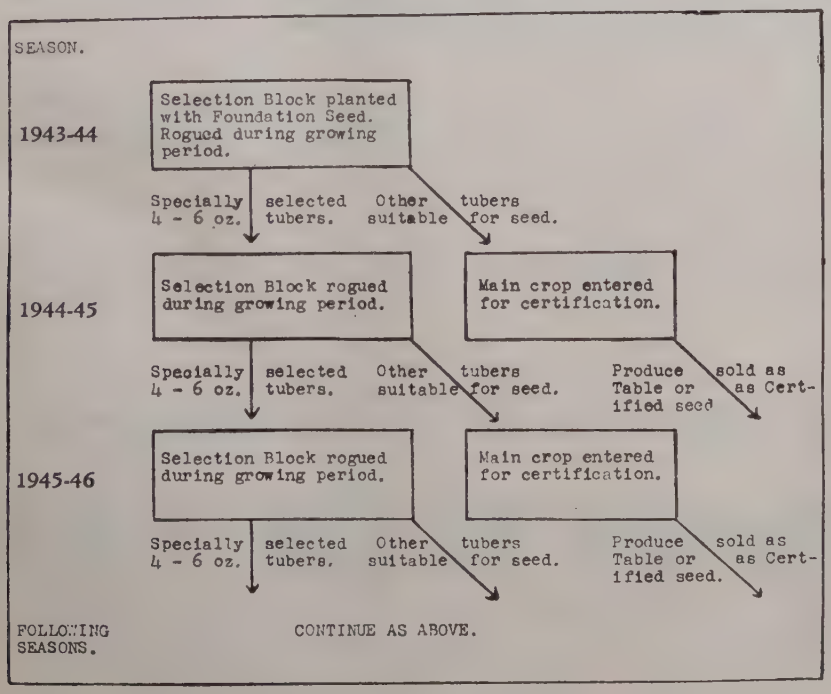
Row on right affected by severe mosaic disease. Leaves have a mottled appearance and are generally crinkled. Yield is substantially reduced.

Many progressive growers maintain their own special seed blocks for producing their own seed for the next year's crop. These blocks are planted with specially selected seed from individual plants, selected on account of their type and freedom from virus disease, and are rogued particularly carefully during the season. **Since the spread of virus is most rapid in the latter stage of growth, the special seed block is best dug on the early side.**

It should be realised, when selecting tubers for seed, that consideration of shape and appearance alone may lead to bad results. It must be remembered that virus diseases cannot be detected by the appearance of the tuber. On the contrary, virus-infected tubers may be perfect in shape; but the effect of virus disease in the parent plant may have caused the tuber to grow no larger than seed size. Hence, a seed-tuber may be small because of (a) mere immaturity, or (b) reduced vigour of the parent plant due to virus disease infection. In the latter case the tuber will almost certainly carry virus in the sap, and, because of this, is a potential source of disease spread in the next year's crop in which it is planted.

Seed should, therefore, have been chosen from plants known to be healthy in the field, and typical of the variety.

DIAGRAM SHOWING THE PROCEDURE WHEN USING A SELECTION BLOCK.


SEASON.
1943-44
Selection Block planted with Foundation Seed. Rogued during growing period.
Specially selected 4 - 6 oz. tubers.
Other suitable tubers for seed.
1944-45
Selection Block rogued during growing period.
Main crop entered for certification.
Specially selected 4 - 6 oz. tubers.
Other suitable tubers for seed.
Produce Table or Certified seed
sold as
1945-46
Selection Block rogued during growing period.
Main crop entered for certification.
Specially selected 4 - 6 oz. tubers.
Other suitable tubers for seed.
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Centenary of Noted Dairy Scientist

Dr. Stephen Moulton Babcock

— By —
W. M. SINGLETON,
Director, Dairy Division, Wellington.

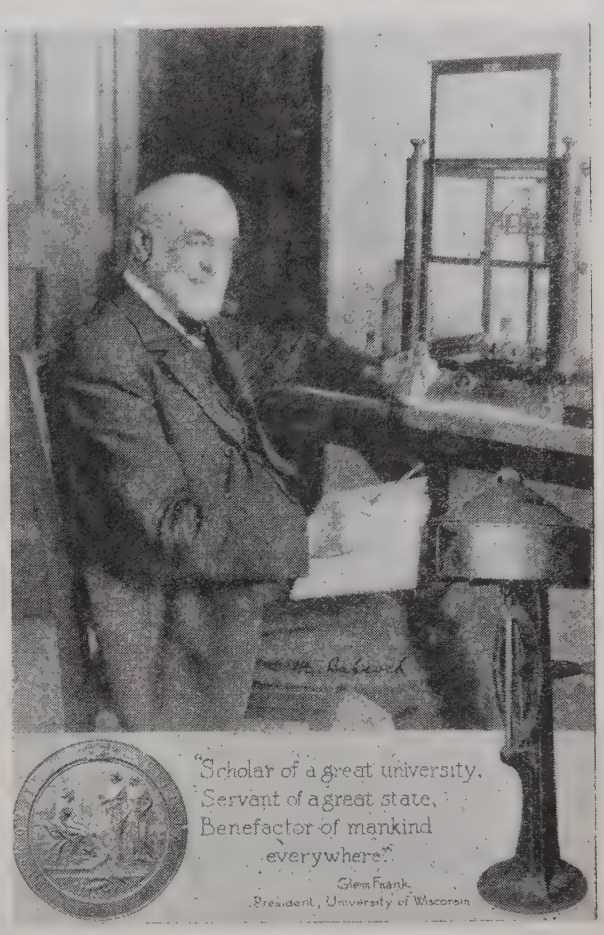
THE College of Agriculture of the University of Wisconsin, the United States Department of Agriculture co-operating, observed on October 22, 1943, the one hundredth anniversary of the birth of the noted Wisconsin dairy chemist and scientist, Stephen Moulton Babcock, Ph.D.

Born at Bridgewater, New York, in 1843, he graduated from two eastern institutions, studied chemistry at Cornell University from 1872 to 1875, and from 1876 to 1879 specialised at the University of Gottingen in Germany, where he received his doctorate. Returning to America, he was instructor in chemistry at Cornell and later chief chemist of the New York Experiment Station. In 1888 he accepted a similar position in the University of Wisconsin, and in 1890 accepted the assistant directorship of the Wisconsin Experiment Station. He retired from active service in 1913, but as professor emeritus retained touch with the work of the university almost until his death on July 1, 1931.

Babcock Butterfat Test

Although Dr. Babcock, through a long and energetic life of teaching, investigation and research, increased greatly the world's agricultural knowledge and dairy technique, he will be remembered longest for the invention, in 1890, of the butterfat test which bears his name. The invention was so perfect for the purpose that it is still operated almost as originally devised, and for over fifty years has provided the basis on which milk and cream have been bought and sold. It also has been the basis for the care, feeding and breeding of dairy cattle, and consequently of herd improvement through herd testing. It is perhaps the greatest single invention in the history of dairy science.

The merit of the invention was immediately recognised in New Zealand, and New Zealand dairy-farmers were the first to accept and use the Babcock test in a large way. The first Babcock testers came to this country in 1892, and within ten years, payment on a butterfat basis, as determined by the Babcock test, was in almost general use at New Zealand dairy factories. The method was, in fact, accepted with what now seems almost incredible rapidity for so revolutionary a departure from accepted standards of measurement, and one which, to the untutored mind, must have seemed to border on the mysterious. Apart from providing a simple, cheap, convenient, and accurate basis of measurement, it solved the watered milk problem, and relieved dairy factory managers of considerable trouble and anxiety. Moreover, it protected both buyer and seller.



N.Z. Testimonials

Appreciation on the part of the New Zealand dairy industry has not been lacking. In 1891 dairymen of this country sent Dr. Babcock a handsome testimonial in recognition of his invention, and in 1913, at the time of his retirement from active service, again extended appreciation and good wishes.

For Stephen Moulton Babcock the man, there has been nothing but praise from those who were privileged to know him. He was a born teacher, genial, kindly, broad-minded, and an inexhaustible source of inspiration. The direct benefits of the Babcock test can, in part at least, be estimated, but the indirect results of his teaching and example, filtering to many countries through his pupils and disciples, are incalculable.

The fact that he denied himself a fortune by refusing to patent his discovery, and gave the reason that the work was done in the State's time, not his, entitles him to a place among those great men who sacrificed personal gain for the benefit of mankind.

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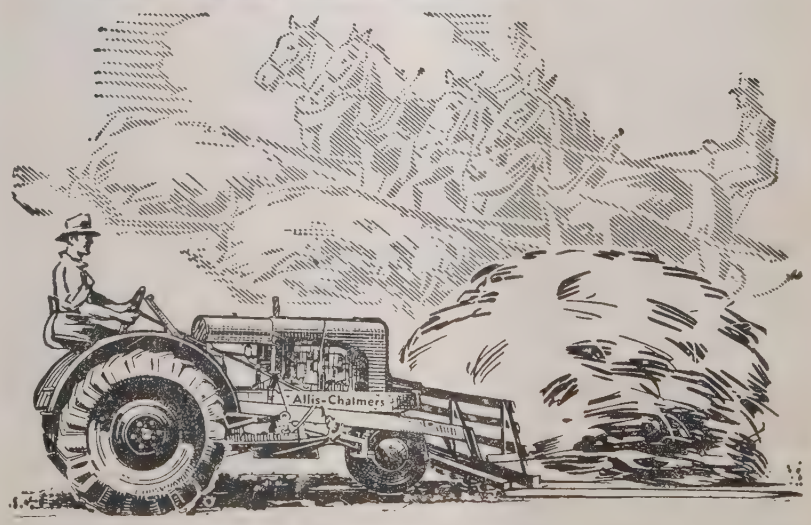

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Perennial Weeds

— By —
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Fern or Bracken (*Pteridium esculentum*) is a very common native weed plant which occurs throughout the Dominion on second class country of fairly high rainfall. On ploughable country it is of small account and can be eradicated comparatively easily, but on unploughable country it presents a more difficult problem. It increases both by spores and by means of creeping underground stems.

As is the case with most weeds, control should aim at striking at its weakest point. Fern burns quite readily, and the burning of it should be carried out in the late summer when the plant is drying off. Immediately after burning, grass seed should be sown to provide sufficient feed in the early spring for cattle which should then be crowded on to the affected areas. When doing this, sufficient grass should be available to enable the cattle to keep in condition.

In the spring the fern commences its annual growth by means of a shoot which comes from the creeping underground stems. This stem or miniature frond is eaten readily by cattle although they cannot live on it alone. At this time many of the fronds which are very brittle are broken off by the trampling action of cattle. This spring grazing should be carried out before the frond starts to uncurl as after that stage it becomes unpalatable and hard to break.

In order to carry out fern control efficiently it is necessary to spell and crush periodically through the spring and summer. Occasional subsequent burnings are often necessary when the fern gets away. The formation of a good close sward of plants such as danthonia will do much to check the fern, and the introduction of plants such as lotus major is sometimes of value in attracting cattle into the thicker portions which they would otherwise leave untouched.

Gorse (*Ulex europaeus*).—This was introduced into New Zealand in the early days of colonisation, having been noted by Charles Darwin in the Bay of Islands over one hundred years ago. Its main use was as a quick-growing stock proof fence. Many such fences were established throughout the country, particularly in the drier and more windswept districts. Very often the gorse was sown on top of sod fences, both of which together afforded quite good shelter as well as providing a satisfactory stock fence.

Gorse was also sown out over considerable areas in order to provide feed for sheep. For a time these areas were well utilised, but before long they got out of hand, with the result that the gorse took complete charge. At the present time little or no gorse is ever sown for either hedge or feed purposes. In fact a considerable mileage of gorse hedge is now being removed annually. There are several reasons for this. Firstly, the gorse provides excellent cover for the ubiquitous pest, the rabbit. Secondly, the need for this type of shelter is not as great as it used to be because in most windy districts the wind is now broken up considerably by good plantations. Thirdly, wire fences, which,

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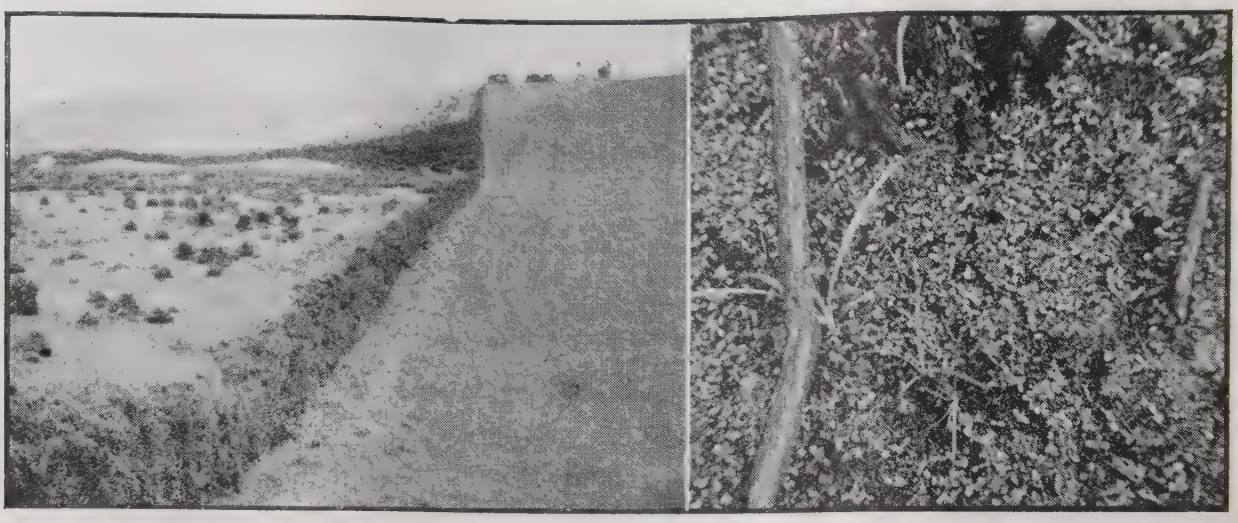


Left.—A low producing sward with a consequent low-carrying capacity leads to the rapid ingress of gorse. *Right.*—The burning of standing gorse without the subsequent sowing of suitable grass and clover seed usually results in a dense stand of gorse seedlings.

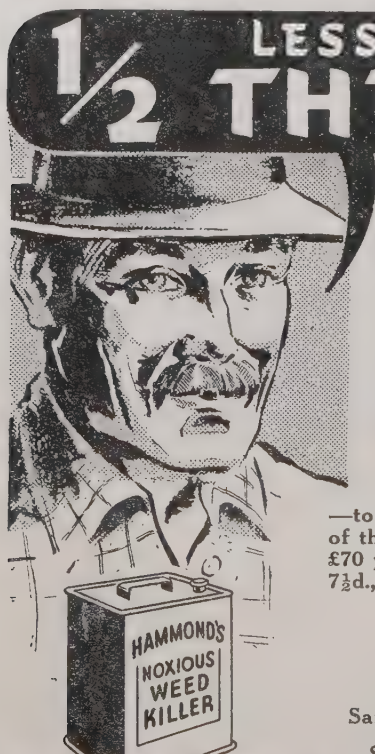
in the early days were almost unprocurable, can now be erected comparatively cheaply. Fourthly, many gorse hedges through age and sometimes neglect are not capable of providing a satisfactory check to stock. Lastly, the cost of maintaining gorse hedges in good condition is high. It is largely from fence lines that gorse has spread to occupy the large area of land that it now does.

Although gorse does occupy very large areas all through New Zealand it is questionable whether it is as widely-spread a weed from the farmers' point of view as manuka, fern, or certain other native plants that tend to regenerate on bush country. It is also interesting to note that comments regarding the spread of gorse are usually made when it is in its most striking stage, that is, when it is in flower. If many other weeds were as conspicuous as is gorse there is little doubt that they would cause much more discussion than they do now. Nevertheless, there is no doubt that gorse is one of our major weeds particularly on unploughable country.

Its importance as a weed is accentuated by the fact that it sets large quantities of seed which may remain dormant in the soil for many years. These, when the soil is disturbed grow readily, and are liable to start off fresh infestation. On ploughable country gorse may be controlled comparatively easily. The use of the rotary hoe has, in some districts, done much to eliminate gorse quite effectively.

Once the initial clearance has been made on ploughable country gorse will seldom re-establish itself while the pasture remains good. The presence of gorse in an old pasture on second class ploughable country usually indicates that the pasture itself is of low carrying capacity, and is ready for the plough in any case. Gorse is seldom troublesome in a first class sward that is vigorous and closely grazed.

It is on rocky or unploughable hill country that gorse presents its greatest problem. Any weed can be economically eradicated only if the cost c



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its eradication is compensated for by the value of the extra financial return gained. It is due almost entirely to this factor that gorse has spread so widely on our hillsides.

The firing of standing gorse is only partly satisfactory. A good burn will clear much of the growth but does not result in the death of the plant. Burning also lets in the light and moisture which assist materially in the germination of the multitude of seeds that are lying dormant on the surface of the soil.

More satisfactory burns may be secured by cutting the gorse and letting it lie for some months until the young shoots from the cut plants are coming away. A burn at this stage is much more likely to permanently affect the parent plant. A seeding of quick growing pasture plants may be made on the ashes to induce stock to graze and destroy the young seedlings that are bound to come up.

Gorse and sod fences are now virtually things of the past. Although many good ones remain the majority have become so broken and weakened that they are of no use as a stock-proof fence and merely act as a harbour for rabbits.

Seed of suitable permanent grasses should also be sown in order that a close sward may be formed. Such a close sward is required as it provides both permanent grazing and permanent smother for young weed seedlings.

Considerable areas of gorse infested country have, in recent years, been planted out in quick growing trees. Large areas of this type of afforestation have been carried out almost entirely by public bodies. Such work on a large scale is out of the question for most farmers because of the time lag between heavy initial cost and the ultimate return from the milled timber.

Some years ago an insect parasite of gorse was liberated in various parts of the country. This parasite destroys the seed in the pods. In the localities where this has become established the parasite appears to have done excellent work as far as the prevention of seed setting is concerned. It should be remembered, however, that the parasite does not affect the existing plant but merely tends to prevent it from producing seed.

Hard Fern (*Paesia scaberula*).—This fern is abundant in many parts of New Zealand, and is very troublesome as a pasture weed on hill country that formerly carried rain forest. On this country it increases rapidly, and on account of the difficulty experienced in its control is often regarded as a worse weed than bracken fern. The plant increases by means of creeping rhizomes which are near the surface of the ground. Knowledge of this fact may be used in order to bring about its destruction.

A really hot autumn burn when there is sufficient dry growth to carry a good fire will usually result in the destruction, not only of the top growth, but also many of the rhizomes. Following the burn, a suitable mixture of grass seed should be sown in order to set up competition with the fern, and also to attract stock to these patches.

The spraying of hard fern with arsenic pentoxide has also proved successful, but the use of this should be decided on only when small areas or patches, which cannot be readily fired with success, are to be dealt with.

On hill country in high rainfall areas hard fern is a troublesome weed particularly where sheep grazing is close and continuous.

Subsequent grazing management will do much to either eliminate or to encourage the hard fern. With close and continuous selective grazing by sheep the fern is left severely alone and will gradually re-establish and spread. By allowing the grass growth to come well away periodically, and then stock-

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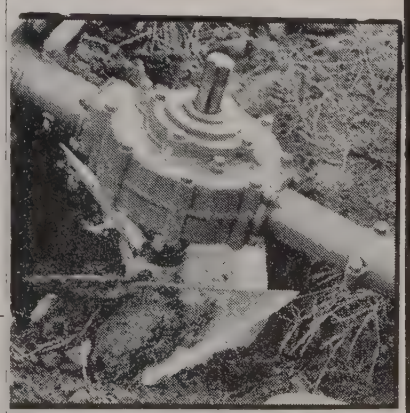

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ing fairly heavily by cattle the young fern is damaged considerably and its spread greatly hindered.

Horehound (*Marrubium vulgare*).—A very common plant that is present in many parts of New Zealand. As a rule horehound occurs on sweet soils in dry situations of fairly high fertility. On sour soils it is seldom present. The seed capsules are somewhat "burry' and are carried readily in the wool of sheep. This accounts, at least in part, for the very common presence of horehound on sheep camps where it may dominate fairly large areas. The seeds germinate readily in the rich and broken turf, and as the plant is not usually eaten with relish by stock it increases rapidly.

When, however, other feed is scarce, particularly in the winter, sheep, when crowded on to it, will eat the horehound down close to the ground. It has been reported that the meat of sheep that have recently been grazing horehound has an unpleasant, bitter taste.

Control measures may consist of one or all of the following:

1. Concentrated grazing by sheep when other feed is scarce;
2. Hand grubbing;
3. Poisoning with a dry, sodium chlorate dust mixed with ten times its weight of lime or sand.

In dry situations of high fertility horehound often forms dense associations.

The killing of the horehound should, where possible, be followed by scarification of the soil and the sowing of permanent sward forming pasture plants.

Lupin (*Lupinus arboreus*).—The lupin serves as an excellent example of a useful plant that, when it has accomplished its work, becomes a weed. In the binding and bringing in of sand

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country lupins play the major part in the second phase. The first phase is that of binding the raw sand by plants such as marram grass. Following on this, the next step is that of raising the fertility to a level where other grasses and clovers will establish and remain.

It is at this stage that lupins play such an important part. They act partly as stabilizers of sand, and partly as enrichers of the soil by virtue of their nodule forming nature and the large amount of humus that they add to the soil in the way of fallen leaves, stems and pods. Following the thorough establishment of the lupins the land is then sufficiently firm to establish either trees or grasses. It is then that the lupin becomes a weed in that its presence represents financial loss because it can be replaced by more profitable plants.

Manuka (*Leptospermum scoparium*).—This is one of the most widely distributed of the larger native plants. It has a very wide habitat range, and with the exception of extremely dry country, will grow almost anywhere from mountains to seashore. On the whole it is usually dominant on poor and sour soils where it forms extensive, and dense, almost pure association.

Like any other plant manuka is a weed only when its presence results in a financial loss. Unfortunately this is the case on much of the manuka infested country. One should not, however, lose sight of the fact that in some areas, particularly near the larger towns, manuka represents a valuable source of income in the form of firewood. On a good average block, manuka to the value of £100 or more per acre may be secured. From this gross return should of course be deducted charges such as royalty, labour and cartage.

On sandy country lupins play an important part in raising the soil fertility subsequent to the stabilisation of the sand by marram grass, pingao or spinifex. Here lupin may be seen in the process of crowding out the last patch of marram grass.

The seeds of manuka are very small, and on this account are spread rapidly, either in the wool or hair of animals, or by the action of the wind. On ploughable country particularly with the use of heavy machinery manuka may be controlled fairly easily. As is the case with gorse, ingress of manuka on ploughable country can be regarded as an indication that the sward is of low carrying capacity owing to lack of fertility. In these cases the pasture is usually ready for the plough in any case. Close continuous grazing favours the re-establishment of manuka, particularly if the sward is open. A good close sward of mat-forming species will do much to check the ingress of manuka.

On unploughable hill country the eradication of manuka may be both difficult and expensive. Many methods have been adopted with varying success. While hand cutting undoubtedly gives the best results, the cost of this is often prohibitive.

Although the burning of the standing manuka has several disadvantages, there is no doubt that a good clean first burn does give satisfactory results provided that subsequent management is suitable. For such a burn it is advisable to cut a several yards wide fringe round the block to be burnt. This serves two purposes. Firstly, it enables a fierce fire to start a good burn in the major portion of the block. Secondly, unless such a fringe is cut, the outside part of the area is rarely burnt well.

When a good burn is secured suitable seed should be surface sown on the area. Mat-forming species such as browntop or danthonia should dominate the mixture. A number of young plants are certain to establish after the burn. If the area is spelled for a season to secure a good growth of grass roughage a satisfactory secondary burn may be secured. In future years periodical spelling and burning may be necessary. The success of this method depends, firstly, on a good initial burn and, secondly, on the for-

On rolling country manuka control is not difficult on the ridges and spurs. It is on the slopes and in the gullies that control measures are both expensive and difficult.

Left.—Manuka seedlings establish rapidly following a burn particularly if mat-forming grasses and clovers are not sown.
Right.—*Oxeye* daisy is essentially a weed of dairy farm.

mation of a good close sward of grass after the burn.

In areas where hand cutting can be carried out economically, and where there is a reasonable cover of grass already, the cut material may be left on the ground to rot or to be burnt later with a good bottom of grass roughage.

Oxeye daisy (*Crysanthemum leucanthemum*).—It is almost only on out and out dairy farms that oxeye daisy becomes really troublesome. It is a perennial and somewhat creeping plant growing up to 2 feet in height. The flowers are yellow centred with white rays. In general oxeye daisy is commonest on the heavier country, but this is probably due to the fact that it is on this country also that most of the dairying is conducted.

It is not at all uncommon on fairly dry country where only cattle have access to the paddocks.

Cattle will not graze oxeye daisy although it is eaten fairly readily by sheep. A light infestation of oxeye daisy can, therefore, be eliminated by the periodical stocking of such paddocks with sheep. In the event of heavy infestation ploughing and resowing followed by sheep grazing until the daisy is sufficiently reduced is the only possible remedy.

Pennyroyal (*Mentha pulegium*).—This is a perennial creeping weed that is very common in some of the dairying districts of the North Island where it has been regarded as a serious weed. In the far south it is seldom seen.

Pennyroyal is almost entirely a plant of damp sour soils. Isolated patches may be eliminated by the use of weed killers, but on a large scale this cannot be done without harming the pasture considerably.

Where plant and seed infestation is heavy it is necessary to plough and fallow. This should be accompanied by a general sweetening of the ground, that is draining and liming. It is advisable to grow rapid maturing annual crops for one or two seasons. Crops to be used are those that mature before the pennyroyal has time to mature its seed. When the pasture is sown out a good mixture of permanent pasture plants should be selected.

On unploughable country good results have been obtained by topdressing with lime and phosphate. Areas so treated have then been left ungrazed until early summer. Allowing the growth to come away in this manner will smother out a large amount of pennyroyal.

(To be Continued)

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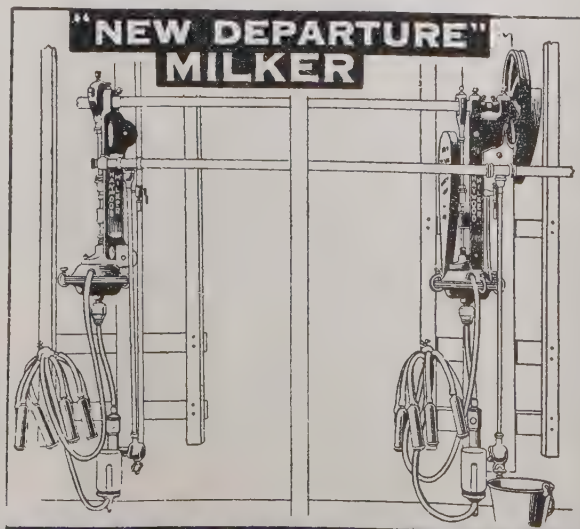

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The Rape Crop As A Lamb Fattening Feed

— By —
W. V. HADFIELD,
Instructor in Agriculture,
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Crop of Broad Leaf Essex rape being fed off in breaks.

In much of the South Island grassland, carrying capacity is limited during the summer period when lack of rainfall results in dry, unproductive pastures. This necessitates the growing of some fodder crop for fattening a large proportion of the lambs. This need is not so apparent in the North Island, where an abundance of feed is normally available, and a higher percentage of lambs is sent away fat off the mothers. Of the green feeds used for fattening lambs, rape is undoubtedly the most important. The area sown down annually varies somewhat, but approximates 190,000 acres, over 80 per cent. being grown in the South Island, and Canterbury alone contributing nearly 100,000 acres.

THE feed value of rape lies in the ability of the plant to produce a large bulk of nutritious, highly digestible leafage. The poor fattening qualities possessed by immature rape are due to the unbalanced nature of the protein and carbohydrate constituents of the feed, but as the plant reaches maturity and the leaves begin to turn a bluish colour, it is then that the protein carbohydrate ratio attains an optimum balance. This is the stage at which the feeding of rape is recommended.

Varieties

The two main varieties of rape distributed commercially in New Zealand are the "Broad Leaf Essex" and "Giant." Broad Leaf Essex rape possesses a large number of relatively small dark green leaves which form a dense crown on a very short stem. It ripens more readily than the Giant variety and is capable of greater recovery; so much so, that by overwintering the fed-off stubble, it is possible to utilise it the following season for a seed crop—a practice which, however, is not always successful.

Giant rape has large pale green leaves with a more open crown, and in later growth forms a single stem. It is later maturing than Broad Leaf Essex, but produces a greater bulk of feed of a higher feed value. Its disadvantages are that it shows little or no second growth recovery and on the heavier type of country it often grows too tall. This tends to make sheep feeding difficult, and in wet weather lambs often remain damp and cold when feeding in the crop.

Strain Improvements

Prior to 1935, preliminary investigations were carried out by the Agronomy Division of the Scientific and Industrial Research Department with a view to gaining information on the various types of rape. From the outset it became obvious that the varietal names under which commercial rape was sold gave no indication of type. Broad Leaf Essex and Giant rape sold as such proved to be a mixture of a number of types, and the farmer could not be guaranteed that he was purchasing the variety actually specified. The productive capacity, palatibility, feed quality, and chemical composition of these various lines were also studied with a view to carrying out breeding and selection work, and out of the types revealed by this research, two main types were finally selected. They were the Broad Leaf Essex and Giant varieties.

Superior plants of these two types were selected and saved for seed. This seed was further multiplied, until sufficient became available for multiplication on a field scale. The resultant produce became available and was distributed for the first time as New Zealand certified rape seed, carrying a guarantee as to type.

Reselections of both types have been carried out each year by the Agronomy Division and have been made available for multiplication under the certification scheme as carried out by the Department of Agriculture. The certified seed so produced is distributed into commerce and is made available to farmers.

By this method of keeping a close supervision over seed production, the Department of Agriculture is in a position to make available, through the usual mercantile channels, both Broad Leaf Essex and Giant rape seed which are guaranteed true to type. Sufficient of this certified rape seed is made available each year for New Zealand's requirements, and in this way the

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Soil Suitability

Rape is grown successfully over a wide range of soil types. Experience has shown, however, that the crop does not mature fully on cold foothill areas or in heavy rainfall districts. On light or stony land Giant rape is sometimes preferred. This is probably due to the greater bulk of feed normally provided by this variety. It is probably of significance that the greater amount of Giant rape sown in Canterbury is on the light land north of the Rangitata River.

Place in Rotation

Rape may be fitted successfully anywhere into the crop rotation, but it is wise to avoid sowing it after other brassica crops in districts where club root disease is at all prevalent. Rape is frequently the first crop after grass and is then followed by wheat or any other grain crop. It may also be grown successfully after wheat or oats, or it may occupy the last place in the rotation in conjunction with a grass seed mixture. The type of rotation on a mixed cropping farm may be as follows:—

Out of lea into rape, followed by wheat and finally sown down into permanent pasture, or on the better class of land, out of lea into wheat, rape, wheat, fallow, and sown down into pasture.

Where a grass seed mixture is sown down with rape, a suitable rotation may be as follows:—

Out of lea into wheat, fallow, linen flax, rape, and grass seed mixture.

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Cultivation

A practice frequently adopted on weedy land, especially where twitch is at all troublesome, is to sow the rape on ridges. This enables the crop to be intercultivated and a "cleaning" programme carried out. It is believed that the crop matures more readily when grown on ridges, and from the feeding point of view the crop is not fouled to the same extent and easier feeding is attained. This practice can be adopted to advantage on foothill country.

Cultivation for a rape crop should be thorough to ensure a clean, firm, fine seed-bed. If the crop is out of lea ground, early cultivation is desirable. The ground may be "hustled" or "skim ploughed" in autumn, with surface working so as to break up the turf, and deep ploughed in late winter or early spring. Adequate cultivation so as to keep down weeds and frequent harrowing and rolling in the latter stages so as to ensure consolidation before sowing should be the aim.

A young crop of certified Giant rape.

Sowing

In the South Island rape is sown in November, the actual time varying according to when the feed is required. It is usual to drill in 7-inch rows at the rate of 2½ lb. per acre with 1 to 1½ cwt. reverted superphosphate, although if sown on ridges 1½ lb. seed is sufficient. A few ounces of mustard seed and linseed are often added to provide a more balanced ration.

Where a continuity of feed is desired it is advisable to sow the seed in several "breaks," at varying intervals, according to when the feed is required. By sowing the "breaks," say, at fortnightly intervals, the comparatively short grazing season is extended. This practice tends also to spread the risk, in the case of total or partial failure of any of the sowings.

The practice of sowing down a pasture with rape is frequently adopted. Although this method of establishing an ideal pasture cannot be generally recommended, some quite satisfactory pastures do result. Where the main aim is to produce a long-term pasture it is advisable not to sow more than ½ to 1 lb. rape seed with the seed mixture. When feeding off the rape it would be to the advantage of the pasture if the lambs were allowed to graze the whole area, instead of feeding it off "in breaks." From the lamb fattening point of view the mixture of rape and grass provides a valuable feed. Similar feeding results may be secured by the sowing of ½ bushel to ¾ bushel of Italian ryegrass with the rape.

A heavy crop of certified Giant rape.

Grazing Management

Rape is ready to be fed when the leaves commence to turn a purple-blue colour, but, if fed off before this stage dietetic disorders may result, causing the lambs to scour and lose condition. Depending on weather conditions it may take from 8 to 12 weeks before a crop reaches maturity, and the normal grazing period extends over a period of about four weeks, after which the feeding value deteriorates. This length of time varies according to the class of land, and is much shorter on light dry country. The most economical method of feeding rape is to fence it off into breaks sufficiently large to be eaten out in ten days to a fortnight. The practice of providing good quality hay or oat sheaf chaff is advantageous, particularly when wet weather is experienced over the fattening period. It is therefore advisable to accustom lambs to dry feed before they are placed on rape.

The provision of clean worm-free pasture, or a run-off on to wheat or oat stubble is a decided advantage, and in cropping districts most farmers take advantage of stubble ground in this manner. In cases where it is necessary to economise in rape it is found that lambs will fatten quite well if fed on the rape from 3 to 4 hours daily. Good pasture, however, would be a necessary addition in such case. With the Broad Leaf Essex variety, second growth rape is frequently used for "finishing off" "tail end" lambs, or for fattening old ewes.

Disease and Insect Infestations

Clubroot may practically ruin the crop. Rape should be grown only on land believed to be free of clubroot and as a safety measure it is advisable not to sow rape after turnips or swedes.

The brown beetle or grass grub beetle has been known to completely destroy rape crops in the seedling stage. The only remedy is to avoid sowing of rape in late November or early December when the beetle is on the wing.

Aphis attacks, particularly on light dry land, may cause severe damage to a crop. Both the aphis and diamond back moth tend to attack rape at a later stage and if present may necessitate the feeding off of rape at an immature stage to avoid losing the crop.

Conclusion

Rape is not a difficult crop to establish and provided normal precautions are taken in feeding-off this high quality feed, lambs should fatten well and there should be little trouble from dietetic disorders.

Death of Former Director-General

The Late Dr. C. J. Reakes, C.B.E.

"THROUGHOUT his life the late Dr. Reakes was conscientious, kindly and generous. He was an excellent administrative head for the times in which he held control, he was a veterinarian of wide knowledge, and he was a gentleman always."

That tribute to the memory of a former Director-General of Agriculture, Dr. C. J. Reakes, C.B.E., who died on October 3, is paid by one who for many years worked in close contact with him and knew him intimately.

Those of us who shared Dr. Reakes' friendship in private life, adds the writer, found him to be a shy and reticent man, slow to impose his personal feelings upon others, but, nevertheless, one with definite, but conservative views on life. In his official post, when momentous questions required decision, he made up his mind on a course of action only after considerable thought, but when his mind was made up he did his best to give effect to the decision which he deemed wisest. His loyalty to his Minister in the Cabinet, whatever Government was in power, was well known.

The late Dr. Reakes was born in 1865, and graduated from the London Veterinary College in 1892. After some experience in private practice, he came to New Zealand in 1897, and joined the staff of the Department of Agriculture, under the late Dr. J. A. Gilruth, as Government Veterinarian. As a newcomer, he was keen to apply in his adopted country his professional knowledge of the alleviation, and prevention, of disease in live-stock. With unflagging energy, he carried out the duties assigned to him, whether they were those of meat inspection or of investigation of disease in the field.

Early Endeavours

Under the influence of Dr. Gilruth. Dr. Reakes became interested not only in diagnosis and prevention of disease in the field, but also in a continuation of laboratory diagnosis of mortalities. Those were the days when bacteriology was in its infancy. For the benefit of stock, diagnostic work was carried out in a small laboratory established at the headquarters of the Chief Veterinarian, behind the old Parliamentary buildings in Wellington. Dr. Gilruth was also Pathologist to the Health Department, and it was this early training with him that gave Dr. Reakes his grasp of stock diseases in New Zealand. Together with that knowledge, he had a manner of dealing with the farmers of the country which throughout his career stood him in such good stead. Always courteous, rarely ruffled, and ever anxious to assist his colleagues and stock-owners, Dr. Reakes became a well-known figure throughout the country.

Diligent Research

In 1905, a diagnostic and research station for animal disease problems, with a small farm attached, was opened at Wallaceville, and this became the headquarters of the Chief Veterinarian and his first assistant. Dr. Reakes spent long hours in the laboratory in his search for knowledge of the causes of many stock diseases. From 1905 to 1910, in conjunction with Dr. Gilruth, he gave New Zealand much new information on diseases such as mastitis, sterility, contagious abortion, bush sickness, blackleg, facial eczema, and parasites of young animals. It was the delight of the two seniors to walk sedately round the experimental animals in the paddocks and pens at Wallaceville each Sunday morning while discussing and planning new work for the coming week. This team became broken at the close of 1908, when Dr. Gilruth accepted a position in Australia. Dr. Reakes then became Chief Veterinarian and continued his work with even greater activity. He gained as his laboratory colleague Mr. H. A. Reid, who had had wide bacteriological experience.

Academic Award

The following year, through a reorganisation of the Department, Dr. Reakes became head of a new Live-stock and Meat Division, and the following year was awarded the degree of Doctor of Veterinary Science by the Melbourne University, where his excellent work in New Zealand was recognised. Although he was Director of the Division, the Wallaceville Laboratory still remained a haven to Dr. Reakes. There he could get away from administrative worries and enjoy quiet hours discussing the fundamental and practical research in progress. Incidentally, he enjoyed a quiet round of golf on his favourite links at Heretaunga, near Wallaceville. Throughout his middle and later life, Dr. Reakes was always to be found on the links at week-ends. To golf he ascribed his health and ability to stand long hours of office strain.

The late Dr. C. J. Reakes.

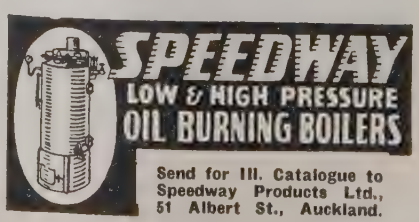
Strenuous Years

During the 1914-18 war, Dr. Reakes, as Director of Veterinary Services, was responsible for the buying of horses for the Army, and was in control of the Remount Depots and veterinary hospitals. The shipping of horses to Egypt was another of his cares. Still another was the purchasing of meat and wool for the Imperial Government. It was for his untiring activity and administrative ability during the war years that Dr. Reakes was awarded the C.B.E.

Known in England

The late Director went to England officially on two occasions. The first visit was for the purpose of gaining a greater knowledge of the meat trade; the second to represent New Zealand at the Empire Agricultural Congress. To senior officials and research workers in England, Dr. Reakes was known not only by virtue of his position, but also for his knowledge of diseases of stock under grassland farming conditions.

In 1918, Dr. Reakes became Director-General of the Department of Agriculture, a position he held until his retirement in 1936.



The vast amount of wastage that occurs annually in the turnip crop, principally through the ravages of club-root and dry-rot disease, could be substantially reduced were growers to avail themselves of what is already known and apply it rigidly in farm practice. This article emphasises the advantages of N.Z. Resistant swede for late-winter and early-spring feed.

N.Z. Resistant Swede

— By —
J. O. WALLACE,
Fields Instructor, Dunedin.

DURING recent years, endeavours have been made, in all countries where turnips are grown for stock-feed, to improve varieties resistant to root diseases. Through careful selection work, an appreciable amount of success has been obtained in latter years.

In the swede-turnip group, the variety known as N.Z. Resistant swede, though not totally immune, is probably the most promising variety available, particularly in resistance to club-root disease. At the same time, it has good grazing qualities when used in its proper category.

Danish Origin

This variety is of Danish origin and was originally marketed under the name Wilhelmsburger Otofte. It is classed as a green-top, but has a tendency to a light bronze as it becomes ripe or attains maturity. It is of good shape, not fangy, and sets only moderately deep in the ground. The flesh is pale yellow and moderately hard, but quite palatable. It is not as heavy a yielder as some of the early maturing, solf-flesh, purple-top varieties of swedes, but is acknowledged to be high in dry-matter content which, from a feed point of view probably more than counterbalances the disparity in gross yield. It is distinctly a mid to late maturing swede.

Merits Acknowledged

The merits of this variety of swede are acknowledged in Great Britain, and a writer in the "Scottish Farmer" had this to say: "Records made during the past few years on the incidence of dry-rot among some 120 varieties of swede at Craibstone Farm, Aberdeen, unfortunately failed to reveal any immune variety. Of swedes the most resistant variety is Wilhelmsburger, a green-top which is outstanding in being resistant to finger-and-toe (club-root disease). Incidentally, this variety has not shown a high infection of dry-rot in these trials."

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"Working for Victory"

T. Whitehead, Ph.D., M.Sc., writing in the Welsh Journal of Agriculture on "A Summary of Seven Years' Work on Varieties of Swede," states: "This is a variety of Danish origin, and the trials have included seed direct from that country as well as from British merchants. The bulb is a globe of more than average size, and the roots are usually not fanged. There is an average fresh-weight yield, while the high percentage dry matter per root gives more than an average dry-weight yield per acre. This variety is the one most resistant to finger-and-toe (club-root). It appears also to show definite resistance to dry-rot and to root-rot spreading upward from the roots or lower part of the bulb. The variety is of mid-season to late maturation, and grows well after all but the most severe frosts. It has been on trial for the whole seven years, and can be thoroughly recommended, particularly in land contaminated with finger-and-toe (club-root disease)."

In the centre is a resistant variety growing on land contaminated with club-root disease, while on either side two well-known varieties have succumbed to the disease.

Official Trials

The variety first came under observation in 1930, when it was included in official trials at the Gore Experimental Area, with seven others, to determine its resistance to club-root. The trial was conducted on land known to be badly infected. It out-yielded all the others, which showed high wastage from disease, and was accorded the highest points in regard to its resistance to club-root.

Since then its popularity has gradually increased as its merits and proper place in the crop programme have become better known. Field observations have fully confirmed those made overseas and in the New Zealand trial.

While principally advocated in this country on account of its resistance to club-root, it has also shown itself to be less susceptible to wastage following initial infection with dry-rot, in that the decay of the flesh is generally decidedly less pronounced than in the purple-skinned types. Often the lesions progress no further than being small, flesh-withered depressions, averaging a small percentage of the bulb, whereas in the earlier varieties the destruction constitutes a high percentage and very often total loss of the bulb.

Locally-Produced Seed

Since turnip and swede seeds have been produced in New Zealand under the supervision of the Department of Agriculture, this variety has been produced under the name of "N.Z. Resistant Swede." Considerable quantities of seed are now available for sowing by farmers.

N.Z. Resistant is a late-maturing swede, and if made available along with other varieties early in the season, before it is ripe, there is a tendency for stock to show a preference for the earlier soft-flesh sorts. The relationship between maturity, or ripening of swedes, and stock preference is not sufficiently appreciated, and is possibly the principal reason for the apparent slow progress that disease-resistant varieties have made in attaining merited popularity.

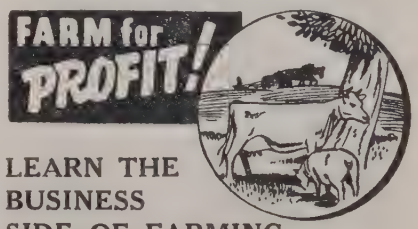
Proper Utilisation

The fact that this variety is a late maturing swede and resistant to disease can be put to good purpose in helping towards the reduction of wastage now prevalent in the crop. The general practice is to grow one variety of swede, the earlier-maturing sorts being the most popular, but, unfortunately, attendant on this practice, it is not uncommon in the higher rainfall districts for a large amount of wastage to develop from root-rots towards the middle of the feeding-off season, if not earlier. N.Z. Resistant if used for early feeding is too late in ripening to be then at its best.

Feeding Qualities

Better utilisation of the ground and a greater assurance in regard to feed supplies could, however, be obtained in many instances by sowing part of the area with the purple-skin varieties for early and mid-winter feeding, and the remainder of the area in N.Z. Resistant swede for late-winter and early-spring use. At this period N.Z. Resistant is ripe and palatable. Field observations show that stock graze it most readily, and it has been accorded excellent feeding qualities, no doubt on account of the high dry-matter content.

It is not to be assumed, as mentioned before, that the variety is immune to common root-diseases, but it is definitely resistant. This, however, does not mean that growers should pay any less attention to the application of sanitary precautions to prevent the spread or elimination of disease from infected ground. Progress in the reduction of wastage lies in the intelligent use of resistant varieties coupled with the rigid application of the principles of crop sanitation.



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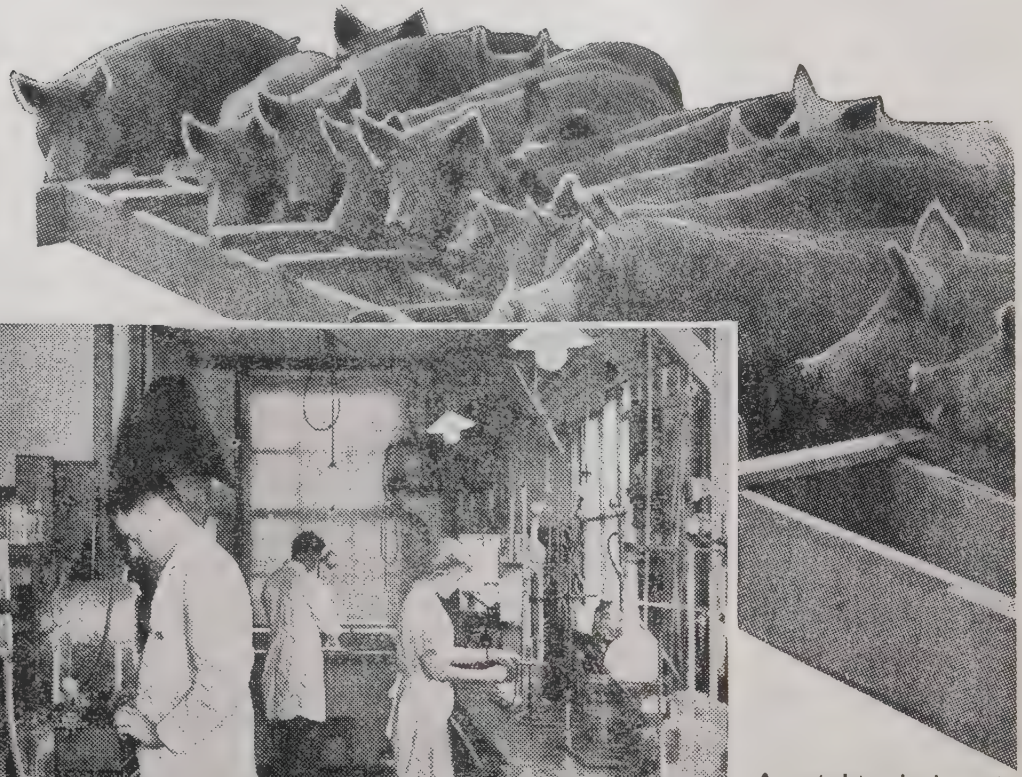

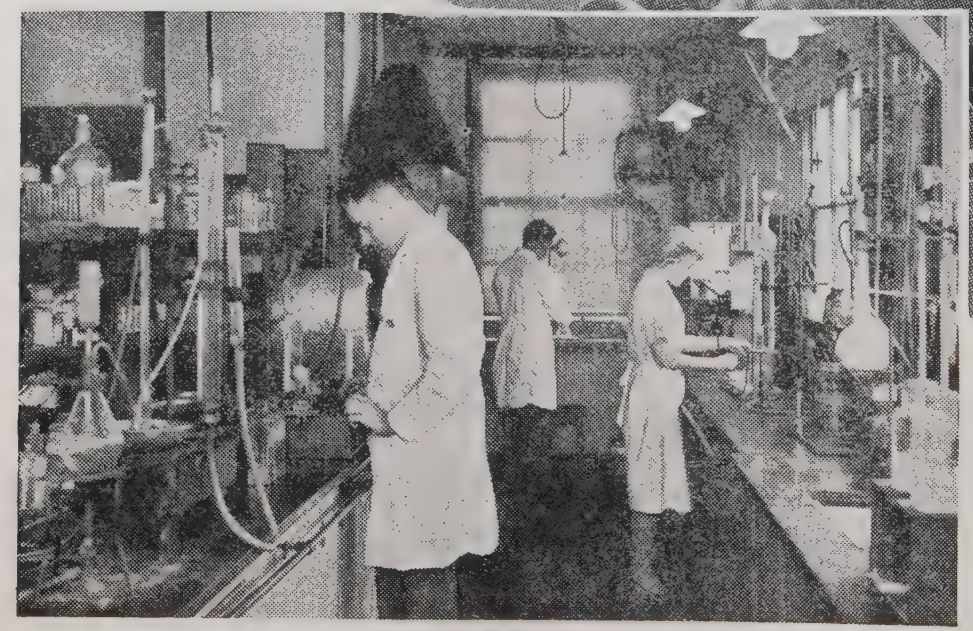

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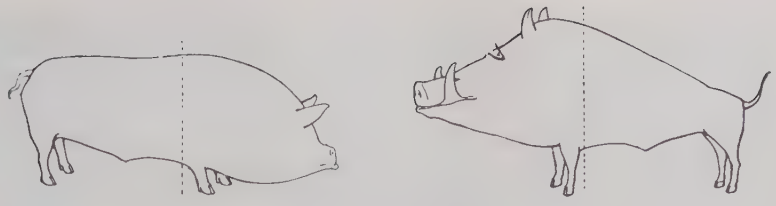
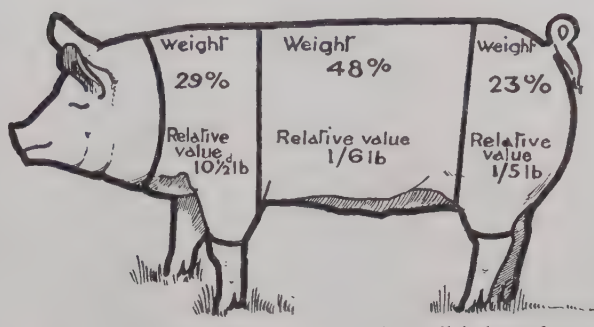
WHAT IS A GOOD BACONER CARCASE?

— By —
H. M. PIERSON,
Acting Superintendent of the Pig Industry, Wellington.





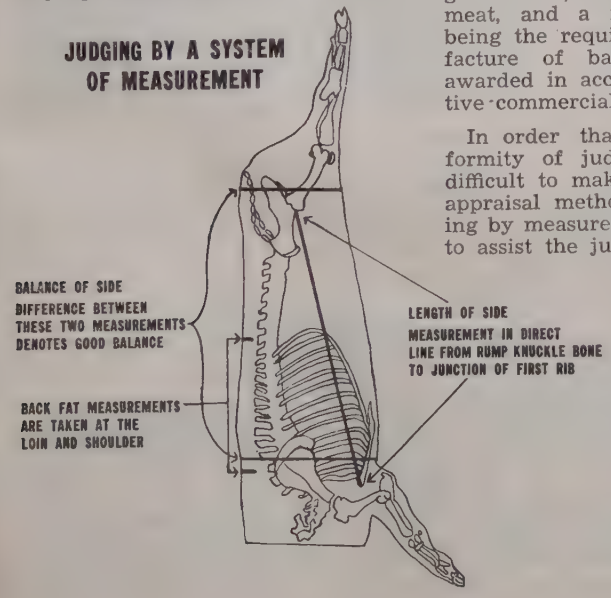
The percentages which represent the well-balanced carcase.

UNTIL a few years ago, the production of improved stock was left in the hands of the pedigree breeder, with the live-stock judge in the show ring as the appraiser of quality. Under those conditions, little information was supplied to the commercial pig-raiser about the suitability of his pigs to meet the demand of the trade for better-quality carcases.

Baconer competitions, organised through the National Pig Industry Council, curers, and exporting firms, where the carcases are judged, have brought about much improvement, not only in carcase conformation, but also in factors associated with breeding and feeding.

One of the objects of carcase competitions is to emphasise that small quantities of high-quality concentrates, fed in conjunction with home-produced, bulk feeds (roots), can be an economic proposition, particularly in carrying pigs through the winter until dairy by-products again become available. The field days associated with these competitions are also of inestimable value in demonstrating to the producer what is required of him by the exporter, the bacon-curer, the retailer, and the consumer.

The producer has an opportunity of comparing his own entry with a higher-scoring one which must be taken as approaching the ideal, and of contacting those whose job it is to turn the raw product into a marketable one.


JUDGING BY A SYSTEM OF MEASUREMENT
BALANCE OF SIDE
DIFFERENCE BETWEEN THESE TWO MEASUREMENTS DENOTES GOOD BALANCE
BACK FAT MEASUREMENTS ARE TAKEN AT THE LOIN AND SHOULDER
LENGTH OF SIDE
MEASUREMENT IN DIRECT LINE FROM RUMP KNUCKLE BONE TO JUNCTION OF FIRST RIB

SYSTEM OF POINTING BY MEASUREMENT.

In describing conformation, we speak of light shoulders, long middles, and good hams, with a minimum of fat meat, and a maximum of lean, as being the requirement for the manufacture of bacon, and points are awarded in accordance with the relative commercial values.

In order that there shall be uniformity of judging, and since it is difficult to make awards by the eye-appraisal method, a system of pointing by measurement has been adopted to assist the judges.

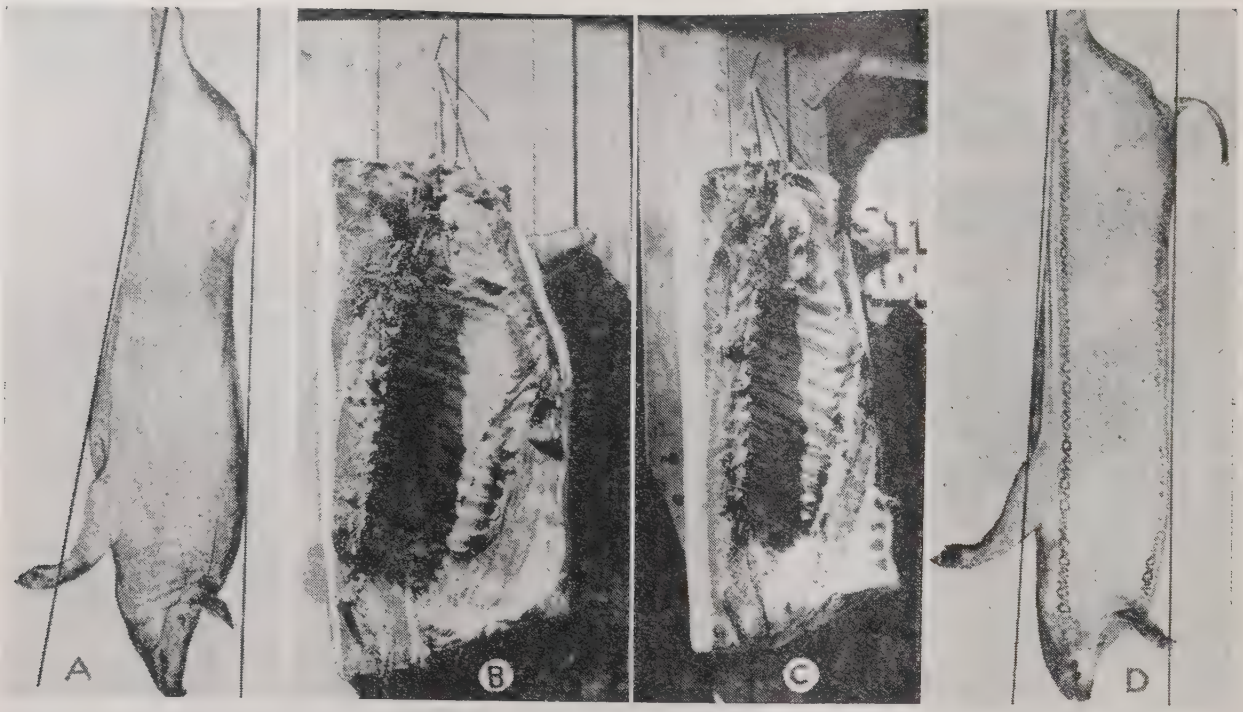
Measurement of the back fat is taken at the shoulders and the loin in accordance with the present grading system, to ascertain the suitability of the carcase to meet the demand for lean bacon.

Points in relation to weight are awarded for length of side by measuring the distance between the pubis bone and breast bone. As length of middle represents the most profitable cut, it is important that pigs should have long sides.

BALANCE OF SIDE IS IMPORTANT

Although judges of live animals have consistently stressed the value of deep flank, a straight top and under-line, there has been no way of assessing balance of side on the carcase, except by measurement.

These measurements have been compiled for pigs of different weight ranges showing the difference between



What is meant by balance of side. *A and B:* Too great a difference in the width at the shoulder compared with the ham. *C and D:* The ideal to be attained.

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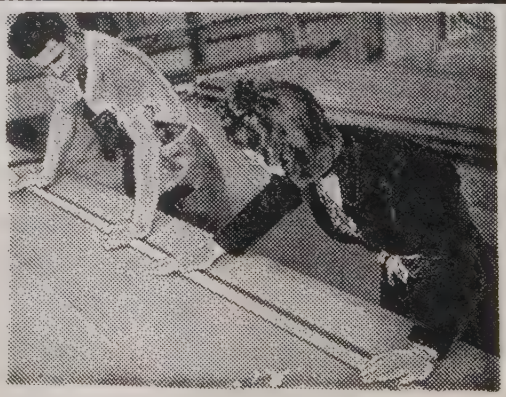

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A: Ideal pork ham. *B:* Ideal bacon ham. *C:* Showing too much shank.

depth from behind the shoulder to the brisket, and depth from the root of the tail to the flank in each weight range of 10 lb. Where this difference is least, it denotes evenness in the width of the side and scores highest. The measurements are made with a sliding calipers.

EVENNESS OF WEIGHT OF LINE.

In this case, the producer is judged on his ability to select four pigs within a given weight-range. An entry, to score full points, must be within a weight range of 10 lb. Every 2 lb. in excess of this range means loss of a point out of the possible of 10 points. For instance, an entry which varies from 135 to 145 lb. would gain 10 points, whereas an entry which had a weight range from 130 to 150 lb. would score only 5 points. While the weight range for baconers is from 121 to 170 lb., it is important that producers provide lines of pigs of even **conformation** and **weight**, and the most suitable weight for bacon manufacture is from 135 to 150 lb.

In the foregoing, an effort is made to standardise judging by a system of measurement. All other pointing is done by the judges on the eye - appraisal method, and this covers well-shaped hams, fine shoulders, and thickness of flank. Deductions are made for diseases such as tuberculosis, pleurisy and seedy cut, and other blemishes.

It might be said that these are beyond the control of the farmer, and, therefore, he should not be penalised for disease, etc., but to a very large extent this can be controlled by feed and management, which build resistance to disease. With care in handling pigs when they are despatched to the works, bruises and blemishes will be avoided. Faulty castration which leaves ugly sores is another avoidable blemish. Pleurisy can be prevented by providing better housing conditions. Even tuberculosis, for which many heads are condemned, can be controlled by building up resistance through better feeding methods.

PRODUCER AND MANUFACTURER.

Competitions of the nature mentioned help the producer to appreciate the manufacturers' difficulties in serving the general public; and, which is even more important at the present time, they help in securing the provision of the right type of meat for the fighting forces. All the points for which he is being judged are in the producer's hands to improve upon by better breeding, feeding, and management. Thus, conformation as it applies to fine shoulders, good hams, and long sides, is largely affected by breeding factors, while excessive fat and freedom from disease are largely due to feeding and management.

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neglect internal parasites in poultry. Full information is available in the Department's free bulletin No. 19.

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Conservation of Rubber On Farm Machinery

There will be no new farm equipment supplied on rubber tyres for the duration of the war. Every farmer will have to make his present rubber equipment last until the war is over or he will be without the advantages or use of these machines at a time when they are especially necessary for increased production, reduced costs, and to offset the labour shortage, says G. N. Denike, Dominion Experimental Station, Swift Current, Sask., Canada.

PRACTICALLY all rubber tyres on farm machinery can be made to give better service and longer life than normal if the following points are carefully noted.

1. Rubber is a perishable product and subject to damage by heat, freezing and thawing, direct sunlight and wet. Keep rubber tyres under cover as much as possible when not in actual use, preferably in a cool, dry and darkened shed.

2. Rubber will age in time but its life can be prolonged by proper use when active, and proper protection when inactive.

3. All rubber tyres, except the solid type, depend upon the correct air pressure for their strength to carry the load and for their long wearing qualities. Check each tyre for correct pressure at least twice every week when in use.

4. Low air pressure causes cracking of the side walls and breaks in the fabric. Keep tyres slightly above the average recommended pressure for longest wear and trouble-free life.

5. Check the alignment of all wheels with rubber tyres at frequent intervals. Any wheel which is out of true or improperly balanced causes excessive wear on that tyre.

6. Never overload or overspeed rubber tyres.

7. Use the proper amount of wheel weights on drive wheel tyres.

8. Adjust the line of draft on each implement to reduce tyre wear and secure best draft results. A low hitch on the tractor may cause excess wear on the drive wheels and an extra load on the implement tyres, wheels and bearings. Side draft will cause uneven wear on tractor and implement tyres.

9. Remove tyres from implements which must stand outdoors for most of the year when not in actual use, and store in dry, cool, darkened shed. Reduce the air pressure a few pounds in all tyres which are in storage.

10. A good coat of recommended rubber tyre paint or preservative will protect all tyres, outside or in storage, against the deteriorating effects of weather and ageing.

Do everything possible to save what you have now. Repair breaks or damage as soon as possible and never throw away any rubber, even when completely worn out; it is now too valuable to be wasted.

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15/11/43

Chou Moellier Seed

Production in Canterbury

In the 1935/36 season, the Dominion grew approximately 12,000 acres of chou moellier. By 1940-41, the area under chou moellier had increased to 19,000 acres and the indications are that the acreage has shown a gradual increase since then. The latest period for which figures are available show that Hawke's Bay, with 5,500 acres; Wellington, with 4,800 acres; Canterbury, with 3,800 acres; and Southland, with 2,500 acres, are the principal growers of this crop. Chou moellier, in general, is not grown extensively on individual farms; it is usually confined to relatively small areas of good land which have received adequate preparation resulting in high per acre production. Nevertheless, many growers of this crop rely largely upon it to supply part of their winter or spring feed.

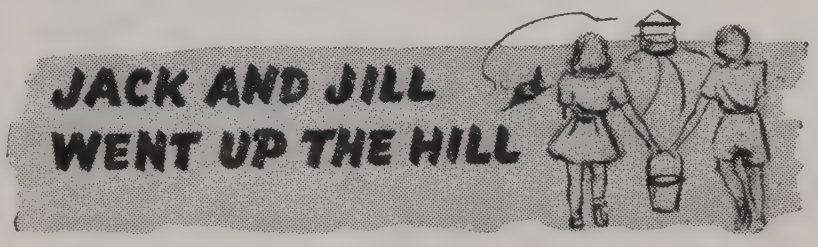
— By —

G. K. McPHERSON,
Instructor in Agriculture,
Ashburton

BEFORE the war, practically all the chou moellier seed required was imported. Occasionally, where the whole crop was not required for fodder, the farmer would harvest the surplus area for seed, but in those cases it was often difficult to dispose of the locally-grown seed, as farmers generally showed a preference for imported lines. Since the outbreak of war, however, supplies of seed from the usual overseas sources have not been available, and all New Zealand's requirements have had to be grown locally. During the past two years a large quantity of seed has been produced in mid-Canterbury, and the notes given below discuss some aspects of the growing and harvesting of the crop.

Soil Type

Like other members of the Brassica family, chou moellier is subject to attack by aphis, diamond-back moth, and white butterfly; and unless the crop is growing vigorously, insect infestation may seriously reduce the seed yield. For this reason, chou moellier for seed production should be grown on land of medium to good quality, preferably in an area where the rainfall is reasonably high. On the lighter land, satisfactory seed-yields may be obtained, provided only that favourable weather conditions prevail throughout the growing period of the crop.



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Preparation of Soil

For a successful crop the land needs to be in good heart. Land out of crop may give a reasonable seed yield, but lea ground is likely to give the most satisfactory results, particularly in a paddock well sheltered from strong winds. The area should be skim-ploughed not later than July, and allowed to lie in the furrow over the winter and spring. During September and October, the skimming could be worked at intervals to clean the land—should twitch be present—and then deep ploughed some time in October or early November. The deep ploughing can then be worked down to form a suitable seed-bed towards the end of November.

Time of Sowing

Unlike rape, which may be sown in March and harvested during the following December—a period of only 9 to 10 months from sowing to harvesting—chou moellier takes a considerably longer period to mature and, therefore, it must be sown earlier. In Canterbury, late November or early December sowings have given very satisfactory results. Close to the foothills, late December sowings have also proved successful. If sown in the autumn, however, the the crop will not run to seed in the following season.

Method of Sowing

This will vary according to circumstances. Where the land is reasonably clean, and competition from yarr or other weed growth is not likely to be severe, sowing through every coulter at the rate of 4lb. of seed per acre has given very satisfactory results. The heavy seeding produces a dense plant-population, and this facilitates harvesting, as the stalks are not unduly thick. If the crop is liable to be smothered with yarr in the young stages, however, there appears to be no alternative but to sow in 26 in. or 28 in. rows at the rate of 2 lb. of seed per acre, and to intercultivate until establishment has taken place. Some farmers prefer to sow in 14 in. rows at the rate of 3 to 4 lb. of seed per acre, and this method also has given good results. The sowing is preferably carried out by means of the rape attachment to the drill; but provided that care is taken to ensure proper mixing, the seed may be mixed with reverted super, and sown through the manure box. A mixture of equal quantities of super and carbonate of lime sown at the rate of 2 cwt. per acre may replace the reverted super.

Isolation

The area to be sown should be isolated from other brassica crops which are likely to be flowering at the same period. In particular, the crop should be a distance of half a mile at least from other areas of chou moellier or kale.

Treatment

If sown in 7 in. or 14in. rows, the crop usually receives no further treatment until it is ready to harvest. If

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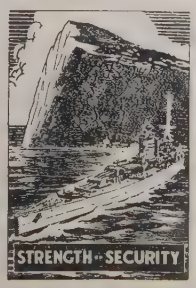

OF NEW ZEALAND—FOR NEW ZEALAND

the surface of the ground happens to cake unduly in the early stages of growth, it may be advisable to light harrow, provided the strike is not too thin, and particularly if horses are available, as tractor tyres may damage too many plants. Little is known at present regarding the effect on seed yield of "feeding off" a crop in the early spring. What evidence is available, however, suggests that feeding a crop results in a reduced seed yield.

Harvesting

The crop should be harvested with the reaper-and-binder, preferably one with a power take-off. With a crop sown in 7 in. or 14 in. rows at the rate of 4 lb. of seed per acre, cutting usually presents no difficulty. Where the crop has been sown on good land in 26 in. or 28 in. rows and intercultivated, it may still be cut with the binder, but usually not without considerable difficulty. Small areas sown this way may even be cut by hand. Chou moellier is somewhat similar to the blue lupin crop in that the pods on individual plants ripen unevenly, and this makes it difficult to decide just when to cut the crop. If cut on the green side, the sample may be poor, although the germination may be satisfactory. On the other hand, if cutting is delayed too long, considerable loss of seed may result, due to the shattering of the riper pods during harvesting. The aim is to strike the happy medium between the obtaining of a good sample and the smallest loss of seed.

In deciding when to harvest, the colour of the seed, rather than the colour of the pods, should be the determining factor. Whilst it may be stated that harvesting should commence when the bulk of the seeds are mottled green to reddish black in colour, with the pods still somewhat green, the stage to cut chou moellier for seed can really be determined only by experience in the field. A considerable saving of seed during harvesting can be affected by such measures as fastening a sheet of some kind under the packers on the reaper-and-binder where seed is likely to escape. It is considered preferable to stook the crop immediately after cutting.

Threshing

How long a crop remains in the stook will depend on the locality and the weather conditions—perhaps a fortnight or three weeks. Seed threshed out of condition will tend to sweat in the sacks, and care should be taken to see that the seed in the inside of the stook is properly matured before threshing commences. Precaution in the handling of the sheaves such as the use of sheets on drays and around the mill or header, and the careful lifting of the stooks, will be well repaid in the extra amount of seed saved. The seed is easily threshed; but it is also easily split in threshing. As it is extremely difficult to remove all the split seed in a line during machine dressing, care should be exercised during threshing to keep the amount of broken seed to a minimum.

YIELDS: Under very favourable conditions, yields of half a ton of seed per acre may be obtained. A good

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"MAX" SCOUR MIXTURE

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PRICES:

8 oz., 7/6 (plus Postage 1/6)
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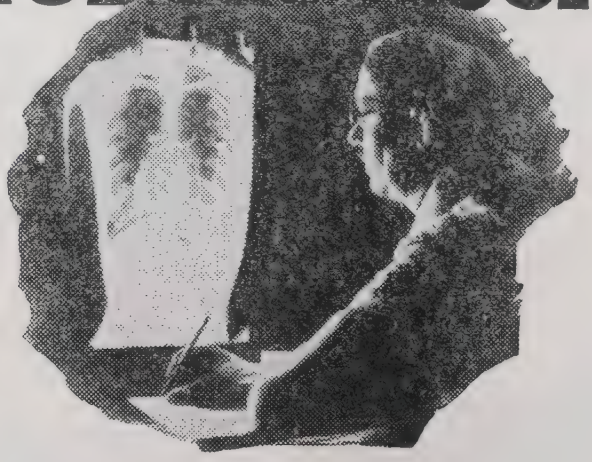
TUBERCULOSIS



You don't inherit it
YOU CATCH IT!

No one is born with Tuberculosis or 'Consumption' as it used to be called. It is a disease spread by germs from an infected person. Nearly always the germs lodge in the lungs. A healthy, well-nourished body resists and overcomes them. But if the body's resistance is low, the germs get a hold and the slow deterioration of the lungs begins.

The person suffering from active tuberculosis is the chief source of INFECTION for others. The germs are spread from the sick to the healthy by:—

(1) Coughing, sneezing, spitting.

(2) Handling articles infected by a patient's sputum.

(3) Direct contact, such as kissing, and even casual contact, such as shaking hands.

The germs can also get into the body through drinking raw milk from infected cows, but the main spread is from the Tuberculosis patient.

The fact that Tuberculosis tends to "run in families" has given rise to the false impression that it is hereditary. But close contact within the family circle is responsible for this "family" tendency—the germs spread from one person to another.

- HEALTHY, STRONG BODIES are the best insurance against Tuberculosis infection.
- You cannot catch it unless you *contact someone who has it.*
- Use PASTEURISED milk.

8

FOR A HEALTHIER NATION

Watch for further Tuberculosis messages.

average yield, however, would be 5 cwt. of machine-dressed seed per acre.

Government Approved Seed

When, after the outbreak of war, it was realised that New Zealand might be faced with a shortage of chou moellier and other seeds, the Department of Agriculture took steps to safeguard the position by production of seed locally under a scheme of careful supervision. It should be remembered, in connection with the production of this and similar seeds, that demand is relatively limited, and that considerable care must be taken to ensure purity of type and prevention of cross fertilisation with other crops of the same family. Also, owing to fluctuations in yield, surpluses and shortages in seed-supply, with consequent variations in price, are likely to occur. To obviate these difficulties as far as possible, arrangements were made with one firm to produce chou moellier seed on contract with farmers, under strict departmental supervision, and to distribute the produce to the seed trade generally, under the description "Government Approved," thus virtually acting as a central agency to ensure the supply of seed of good quality and to eliminate to a very large extent the matter of price fluctuations.

This scheme has operated successfully over the last two years, but owing to the large quantity of seed produced from crops not under departmental supervision, there is in the country at the present time a considerable surplus of chou moellier seed.

It is only by some supervision of the quantity of seed being produced that over-production and consequent low prices to farmers can be avoided. Accordingly, any farmers who may be interested in the production of chou moellier seed are urged first of all to ascertain the likelihood of a market for the seed they may produce. A contract with a merchant at a price acceptable to the farmer is the best assurance that the latter can receive.

Coccidiosis of Poultry

ONE of the most prevalent infectious diseases attacking poultry in New Zealand today is coccidiosis of poultry. In view of its widespread incidence in both islands, and a heavy mortality amongst infected birds, it is essential that poultry-keepers should be able to recognise this disease. The Department's **free** bulletin (No. 22) discusses the causes, treatment, control and preventive measures which must be taken in the event of an outbreak occurring. Write to the Department of Agriculture at Auckland, Wellington, Christchurch and Dunedin for a **free** copy of this bulletin.

Veterinary Notes for the Farmer

Temporary Sterility In The Dairy Herd

WITH the breeding of the dairy cow to a high degree of milk and butterfat production, breakdowns occur in various directions. These are quite understandable when production goes beyond natural bounds. Hence, although we get tuberculosis and sterility in all classes of cows, the accent is on the high producer.

During the last few years, I have come across an increasing percentage of sterility. It has been due to a variety of causes, even on individual farms, and no hard and fast diagnosis can be given, each cow having to be taken separately. It is thus advisable to have the cows examined by a veterinarian, especially when culling owing to sterility, as frequently cows so culled have been found to be in calf when slaughtered at the freezing works. The causes in my experience fall into the following groups:—

1. **Contagious Abortion or Brucellosis.**
2. **Mineral deficiency.**
3. **Over production.**
4. **Ovarian disease.**
5. **Vaginitis.**
6. **Poor fertility in the bull, and**
7. **Trichomoniasis.**

1. Contagious Abortion is now widespread throughout the Dominion, and apart from the loss of the calf and milk-yield is a fruitful source of sterility. There is evidence that less sterility occurs in herds free from contagious abortion than in infected herds. Owing to changes in the lining membrane of the uterus, the animal may become permanently sterile, or there may be a thick discharge which interferes with conception. In these cases, it is advisable not to breed the cow again for twelve weeks after slipping (which usually occurs about the seventh month), and then to wash out before service with about a quart of luke-warm water in which has been dissolved a teaspoonful of common salt and one of baking soda.

2. Mineral Deficiency may cause a hold-up in conception. It is detected by bone-chewing and irregular periods of heat. It may be due to phosphate deficiency, as in certain parts of Wairarapa and Taranaki, and this type is likely to extend owing to the difficulties of obtaining phosphates at present. A deficiency of cobalt existing in certain areas may also affect the breeding efficiency by failure of development of heat periods. These deficiencies may be overcome by putting out licks composed of equal parts of steamed bone flour (or meal) and agricultural salt, which gives a quick result, but needs to be followed up by topdressing with phosphates. However, liming at the same time must not be neglected, as an increased growth without additional lime will tend to cause cases of milk fever. On cobalt-deficient areas, cobaltised salt may be obtained from the local office of the Department of Agriculture and added to the lick. Mineral deficiency is more likely to cause trouble in high-producing animals.

3. Over-production.—I have seen this in herds of high-producing animals, in good condition, where the cows have been producing calves every year over some years, and milking almost up to calving each time. These cows may or may not be irregular in their heat periods, but fail to hold until nature has rested the system sufficiently for another pregnancy to be carried through. No treatment other than rest will prove effective.

4. Ovarian Disease, or abnormalities, such as cysts, occur from time to time. They may result in a suppression of heat periods, or they may cause a cow to remain in season almost constantly without conceiving. These may recover spontaneously or on manipulation by an expert, but they are a nuisance in the herd, and once they are dry it does not usually pay to keep them.

Vaginitis, or "bull-burn," may be a source of temporary sterility, and may be distinguished by small yellowish pimples on the thin membranes of affected parts, which will also be inflamed. Treatment consists of washing out with a salt-and-soda solution as mentioned earlier, or Lugol's iodine (1 in 400). These remedies have been found effective, although other solutions are largely used.

6. Poor fertility in the bull.—In quite a number of cases, the bull comes into the picture, and examination of semen samples are carried out by the Department to determine the fertility of bulls. These examinations give a very fair indication of a bull's potency, but as this may vary with the condition of the animal, the results are not guaranteed in every case. The general tendency is for fertility

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Strong white duck, with hanging cord, free from splinters. Will keep baby happy and safe.

B132 CHILD' PLAY PEN.
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1½d PER SHEEP

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Giesens costs from 2/10 per 100 lambs to 5/8 per 100 sheep.

Suttons costs from 1/5 per 100 young lambs to 5/10 per 100 fully-grown sheep.

Undoubtedly Giesens Carbon Tetrachloride Drench for Stomach, Blood-sucking, Intestinal Worms, and Liver Fluke, and Suttons Nicotine Bluestone Cobalt Drench for Intestinal Worms and Tapeworms in sheep, are the drenches to specify for GENERAL FLOCK DRENCHING. Used alternately they give control over a wider variety of worms.

FOR GENERAL FLOCK DRENCHING

GIESENS
Carbon Tetrachloride

SUTTONS
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to be higher when the condition is rising, and lower when it is falling back, although certain diets are considered to influence the matter also. Each year, the services of a number of valuable bulls are lost as a result of injuries through jumping fences, getting caught up in wire, or other accidents.

7. **Trichomoniasis** is a disease causing abortion earlier in pregnancy than Brucellosis, usually about the fourth or fifth month. Frequently the calf is not slipped, but dies, and becomes mummified in the uterus. This usually prevents conception and suppresses heat, the cows frequently becoming very fat. The disease is spread by the bull with service, either mechanically from one cow to another, or through the bull himself becoming infected. In that case, he may continue to spread the infection for some considerable time. The disease loses its potency if the animal is not bred for six months after slipping, and the germs are destroyed by washing out the uterus after a slip with a solution of Lugol's iodine of a strength of from 1 in 400 to 1 in 600 in lukewarm water. The bull is not always easy to treat, and a layman is not recommended to try washing out the sheath lest he damage the delicate tissues. It is hoped to be able to carry out blood tests for this disease (as in the case of Brucellosis) in the near future, but fortunately the disease is still rare.

Any one or more of these causes may be responsible for temporary sterility in the herd, but the following general rules, if kept in mind, should lessen the trouble:—

(a) Keeping of accurate breeding records.

(b) Attention to food supply and to minerals, particularly bonemeal.

(c) The use of a well-fenced bull paddock, preferably away from paddocks used by the herd.

(d) Keeping strictly from service any cow which has recently aborted or shows any suspicious discharge.

—D. H. LE SOUEF, B.V.Sc., Veterinarian, Wellington.

Internal Parasites

Much concern is felt in farming circles because of the serious annual losses among sheep and calves due to the ravages of internal parasites. A bulletin has been prepared to cover all aspects of this problem, including short descriptions of the various common parasites encountered, and a summary of the methods of treatment available to the farmer. This bulletin, No. 171, is obtainable **free** from the Department of Agriculture at Auckland, Wellington Christchurch and Dunedin.

Answers to Correspondents

Feeding Motherless Lambs.

"J.P." (TAUMARUNUI):—

"I would be grateful for some table of quantities for feeding motherless lambs. I've been feeding them for over 20 years now, but lost many lambs by overfeeding or by feeding wrongly before I worked out a plan of treatment. For lambs coming in without having had a drink I give a dose of olive oil. Some folks say 'add cream to cow's milk.' Others say 'add water to cow's milk.' One friend rang one year saying that over the air she had heard that glucose was the food for lambs. I tried it—and I never lost so many lambs before."

LIVESTOCK DIVISION:—

The feeding of the motherless lambs is a very important matter, and raises its own difficulties in actual practice. The natural food of any mammal is the mother's milk, and when this is replaced by what amounts to an artificial food, due care must be taken to correct, as far as possible, deficiencies in that food. Your practice of giving a dose of olive oil to a lamb that has not had a drink from its mother is a sound one. The olive oil will stimulate movement in the digestive tract, and will act as a substitute for the first or colostral milk from the ewe. This colostral milk acts as a laxative to the young lamb. It has other beneficial effects, as it has antiseptic and protective properties.

In practice it should be easier to rear a lamb that has had a few drinks from its mother than one which has not suckled. For the motherless lamb cow's milk is selected as basal substitute in all cases. In order to show the difference in the composition of cow's milk from ewe's milk, the following table sets out the details:—

	% Water.	% Mineral Matter.	% Protein.	% Sugar.	% Fat.
Cow	87.2	.7	3.5	4.9	3.7
Ewe	80.8	.9	6.5	4.9	6.9

You will see that the sugar content of the two milks is the same, so that the addition of glucose to cow's milk does not appear necessary. You will also see that the fat of the ewe's milk is high, so that the addition of cream is indicated. Water should not be added to cow's milk, as the composition shows. In practice, it would appear that the strippings from a high-testing Jersey cow would probably meet the requirements as nearly as possible; otherwise cream would require to be added to cow's milk.

It is advisable to use the milk from the same cow for the lambs, especially during the early weeks. For the first few days and nights the lamb should be fed only a small quantity of milk (not more than two or three tablespoonfuls), and it must be fed at frequent intervals. The feeds should be given at blood heat, and strict cleanliness of feeding bottles or other vessels must be attended to if scouring or digestive trouble is to be avoided. For the first day, the lamb will require to be fed every two hours, and then the interval between feeding is gradually increased and the number of feeds gradually reduced. After the lamb is 2 to 3 weeks old it is not necessary to feed it more than 3 times a day.

As regards the quantity of milk, a strict table cannot be laid down, but it is always advisable to err on the side of under-feeding than over-feeding, especially during the first 3 weeks.

The Earlier the Healthier
The soundest advice JOSEPH FORD can offer farmers is . . . "Take nothing for granted . . . protect against scour and unthriftiness and improve the general health and condition of your stock . . . use JOSEPH FORD'S COBALT DRENCH . . . *starving is not necessary* . . . and it can be given with perfect safety to ewes and lambs of any age or condition."
JOSEPH FORD'S COBALT DRENCH
If unobtainable from your Stock & Station Agent write the manufacturers
LOUDON BROS. LTD. P.O. Box 235 Palmerston Nth.

Cows with Mammitis

"L.S.W." (WAIMAUKU):—

"Would you please inform me of the cause and possible cure for a number of cows which have calved and come in with mammitis in one or two quarters? The milk from the affected quarter is thick and curdled, while the udder is hard and painful the first time the cow is milked out. The quarter gets worse and the milk diminishes. This is the first year I have had any trouble of this nature. The cows were turned out normal, and were fed good quality hay previous to calving."

LIVESTOCK DIVISION:—

From the description given in your letter there is little doubt that your cows are affected with mammitis. These cows should be isolated, as far as possible, from the other members of the herd and milked last and by hand. Hot fomentations, gentle massage, and frequent milking out of the affected quarters are the only practical methods of treatment. Hot fomentations should be frequently applied for a period of at least half an hour at a time. A bucket filled with hot water and two soft cloths or towels are required. A towel taken from the bucket should be applied to the affected quarter and held in position until it starts to cool off; it should then be wrung out, returned to the bucket, and replaced by the second towel and this procedure repeated for

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

the time specified. The temperature of the water in the bucket should be maintained by the addition of hot water. Gentle massage can be given through the towel. Evidence of pain from such massage indicates that it is too severe and likely to do more harm than good.

Frequent milking out of the affected quarter is of the greatest importance and cannot be carried out too frequently. The material from the affected quarter should be collected in a receptacle containing disinfectant and disposed of by burning or burial. The use of teat syphons is not recommended.

Following the application of hot fomentations a fatty or oily preparation should be well rubbed into the udder to prevent chill. No irritating or blistering agents should be used as these prevent the further use of fomentations if required.

It would be advisable to take samples of milk from the other members of the herd and have them examined microscopically as many cases of mammitis cannot be detected by the naked eye examination. Sterile bottles suitable for such samples can be obtained from the Superintendent, Wallaceville Animal Research Station, Wellington, to whom they should be forwarded when full, a covering letter being sent at the same time. Each bottle should carry an identification mark, either a number or name as may be necessary. When reports are received on these samples they will be classified as clean, suspicious, and affected, and the cows should be milked in the same order.

Exclusive research work is being carried out with different agents for

10 months old . . . 105 guineas

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Dear Sirs, Inglewood, 16/6/43.

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Yours faithfully,
D. O'SULLIVAN.

CODLIVINE *builds* BETTER CALVES

Every farmer knows that Cod Liver Oil, the base of Codlivine, is rich in vitamins. That is one reason why Codlivine grows big calves and safeguards their health. It is both palatable and easily digestible. It's economical, too — one measureful of Codlivine provides a supplementary food ration for 16 calves up to two months old. For quick and more profitable returns feed Osmond's Iodised Codlivine with skim milk or whey.

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udder injections; they require, however, skill and care in their use. The actual causal agent of the infection must first be determined as agents effective against one type of organism have proved useless against another variety, and consequently their use is only likely to prove beneficial when carried out by fully-qualified veterinarians.

In some cases a very acute form of mammitis known as septic mammitis may develop in which the affected quarter rapidly becomes cold and purplish in colour with only a bubbling blood-stained material being found on milking. This is a serious condition from which the animal may rapidly die, or if it survives, the quarter itself may die and after a time slough away from the udder, during which the discharging material will infect the pasture. In some of these cases the cutting off of the teat close to the quarter by allowing a free discharge may save the animal's life and the possible sloughing of the quarter, although, of course, it will be useless for further milking.

Contagious Abortion in Cows.

"H.B." (NORSEWOOD):—

"Two of my cows recently aborted, and have now that thick creamy discharge. Is this likely to infect other cows, and is there any satisfactory treatment?"

LIVESTOCK DIVISION:—

If the cows are suffering from contagious abortion the discharge would affect other cows. It is best to keep all cows showing such discharge away from the herd until the discharge has ceased. Milk them by themselves in a separate paddock or after the other cows have left the bails. Wash them out with a solution of Condy's crystals in warm water 3 or 4 times a day until all discharge has ceased, and wash down the hindquarters and tail before putting the cows back in the herd.

Sores on Cows' Udders

"D.S." (WOODHILL):—

"For years past I have had cows with large udders that got sores between the front quarters. These sores discharge and become very unpleasant. Could you advise me as to cause of same and what treatment could be given?"

LIVESTOCK DIVISION:—

In connection with the sores described, it is necessary to thoroughly clean these either by syringing with a warm solution of bicarbonate of soda and water (1 teaspoonful to a pint) or with peroxide of hydrogen. If crusts or scabs are present these should be removed. A dusting powder made as follows should then be blown (a powder blower should be used) daily into the wound until dried up):—

Permanganate of potash .	1 dram
Boracic acid	2 ounces
Animal charcoal	2 drams

Where the wound is not very deep, thorough cleaning as described and then painting with tannic acid and glycerine should prove effective. In cases where the trouble recurs at each calving, painting the area beforehand for some days with tannic acid and glycerine may act as a preventive. Tannic acid and glycerine can be obtained mixed in correct strength, from any chemist.

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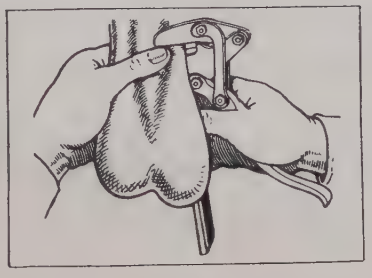

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Farm Practice and Management

Value of Good Pastures

THE value of a good pasture establishment is apparent in the case of a North Otago farmer.

A field, which was in a low state of fertility, when sown to grass with a cover crop, made a poor establishment. It was then ploughed in the autumn, and sown down with Algerian oats, a seeding of 2½ bus. per acre being used. The crop was used for green feed, and was grazed by sheep until it commenced to come into ear. The crop was then mown, and the vegetation was ploughed in. Six weeks later, the first cultivation took place, and this was continued at fortnightly intervals until February 15, when the following quantities of lime and superphosphate were applied; carbonate of lime, 1 ton per acre; superphosphate 2 cwt. per acre, applied together. Later, the area was lightly grubbed to remove truck-marks, and then harrowed. By this time. the land was in excellent condition for sowing down a pasture.

Broadcast Sowing

After several more harrowings, it was rolled, and the seed mixture was sown broadcast. The mixture used was 1½ bushel pedigree ryegrass and 3 lb. permanent pasture white clover. The field was finally harrowed (harrows on their backs), and the final result was a good, firm seed-bed, free of clods. The result of all this preparation was a first-class strike of grass and clover free from weeds. The pasture was sown on March 7, 1942, and no grazing was carried out until May 1, when sufficient sheep were put on to even off the growth, the sheep then being removed for a fortnight. From June 9 to September 15, this area of 12 acres carried continuously 200 breeding ewes, and later it carried the 200 breeding ewes and 261 lambs for a month. After this heavy grazing the pasture came away very quickly, and was soon ready for further grazing.

Outlay Recovered

A recent inspection of this pasture showed it to be in good condition; the clover content being very good, and the ryegrass a good, healthy colour. The presence of porina was noted, but an inspection showed that the number present was not sufficient to damage the pasture to any extent or to warrant the use of poison bait for its control. The total cost of establishing the 12 acres in grass was £60. This outlay was, however, fully recovered during the winter and spring grazing. It also clearly demonstrated that the initial preparation of the seed bed, the use of quality seeds, and care in the grazing operations, are essential factors in good pasture-establishment.

—T. SELLWOOD, Instructor in Agriculture, Oamaru.

Answers to Correspondents

Tannin From Trees

"E.S." (OPOTIKI):—

Regarding home tanning of leather, is there any native tree that can be used? We are about 1000 ft. up in the bush country back of Opotiki. Has bitter willow bark any tanning, or conifers such as Lawsoniana or macrocarpa or gums.

DEPT. OF SCIENTIFIC AND INDUSTRIAL RESEARCH:—

None of the trees mentioned in your enquiry has any appreciable quantity of tannin to make their use worth while. The two native trees of New Zealand the barks of which contain an appreciable amount of tannin are tanekaha and kamahi, but these may not be available in your district.

Ploughing in Lupins

"F. H.," (UPPER TAKAKA):—

I would be glad if you would advise me when is the best time to plough in lupin. I have a paddock sown last March and it is now 2ft. 6ins. high. Would it be better to plough it in now or leave it until the spring?

FIELDS DIVISION:—

Allow your lupin crop to reach the flowering stage before ploughing it under. The plants will then have made their full growth, thus providing the maximum of material for ploughing under.

Don't

allow any part of the garden to be without a crop. If not planted with a vegetable crop, dig over and sow to a cover crop. When dug, the humus-content of the soil will be increased and depleted fertility restored.

TERRIFIC WHITE HEAT 2000° FAHRENHEIT

SPELLS DOOM FOR NOXIOUS WEEDS!

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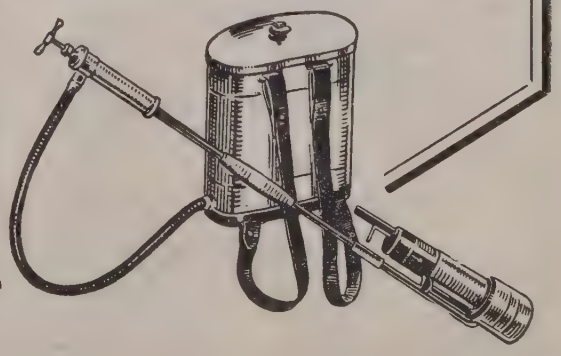


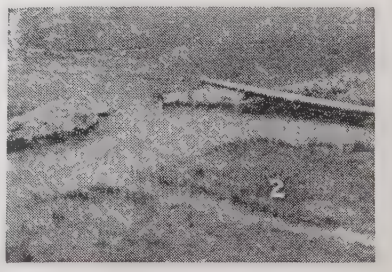
Maintenance of Irrigation Races

THE winter and early-spring work of cleaning out irrigation races and repairing or renewing outlet boxes in the water races, should now be near completion and ready for the coming irrigation season.

Many and various methods of constructing the outlet boxes are used and may be satisfactory to commence with. Once the outlet position has been found satisfactory, however, a permanent concrete outlet should be constructed. This has concrete sides and bottom with a slot of 1in. in depth to allow a wooden partition to slip into the outlet to cut off the water as shown in figure I.

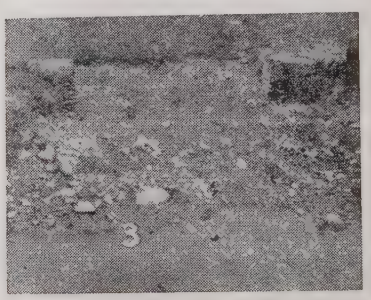
With wooden outlet boxes, one gets warping, and later, rotting of the timber. Scouring of the sides of the water-race as well as the bottom of the outlet has to be guarded against. If a wooden floor is used, a wooden lip sloping into the sides of the race should be attached to prevent flow of water and scouring under the wooden floor. It is unnecessary to emphasize the difficulty and trouble, without considering loss of water, that are experienced when irrigation water breaks away, mainly through faulty outlets.

Figure II shows water being diverted on to land by use of a canvas dam



placed across the water-race, thus raising the level of the water to allow it to spill through the outlet. This is a temporary outlet composed of two boards let into the bank of the race.

Figure III is a more permanent type



of outlet made from old railway sleepers, but scouring in the bottom of the outlet can be observed.

— G. G. CALDER, Instructor in Agriculture, Alexandra.

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Coming to
PROFIT
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Calf Meal

Good herds are made in the early stages of rearing. Calves are like children, if they are undernourished they never recover. Those vital pounds of flesh a week need good material, and every feed of SERVICE CALF MEAL is a good cow coming to profit. Order some today, and insist on SERVICE! Packed in 25, 50, and 100 pound bags.

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Pig Industry Broadcasts.

UNDER the auspices of District Pig Councils concerned broadcasts will be delivered in December as follows:—

1YA, Auckland.—December 16, 7.15 p.m., "Common Ailments," by Colin Wallace, Supervisor, Waikato District Pig Council.

2YH, Napier.—December 16, 7.30 p.m., "Talk to Orchardists," by Ivan H. Owtram, Supervisor, Tairawhiti District Pig Council.

4YA, Dunedin.—December 13, 7.15 p.m., "Questions and Answers," by M. Roderique, Supervisor, Otago and Southland District Pig Council.

2ZA, Palmerston North.—December 21, 8.30 p.m., "Litter Production," by H. Marsdon, Supervisor, Wellington District Pig Council.

Porina Control

SINCE the initial experiments for the control of porina conducted by Mr. L. J. Dumbleton and Mr. D. Dick, of the Cawthron Institute, the treatment of pastures on a large scale is now becoming a feature of farming practice. It is recognized that porina attack on pastures is confined to certain localities in a district, and in such areas considerable damage to pastures is experienced. Consequently, the method of control by spreading poisoned bait is welcomed by farmers generally.

On farms where the practice of sowing down pastures with certified strains of seed is being closely followed, the possibility of these good swards being destroyed by the ravages of porina is a severe worry to the farmer.

The method of control on such pastures has been carried out in the North Otago district, including Hakataramea, with outstanding success. It is the general opinion of farmers that the results obtained are highly satisfactory. During the 1942-43 season, 669 acres were topdressed by a number of farmers with poisoned bait.

Machine in Demand

The machine has been very satisfactory and farmers seem eager to make use of it. A machine for spreading poison bait is located at Oamaru, and under the control of the Department of Agriculture it is available for loan to farmers.

Those farmers who may be requiring the bait-spreader for laying poison-bait next season would be well advised to make early application for the machine to the local instructor. In order to satisfy themselves as to when they will actually require the machine, an investigation of the field for the presence of porina would be helpful. The method used for diagnosis is fully explained in the February, 1943, issue of the Journal of Agriculture.

—T. SELLWOOD, Instructor in Agriculture, Oamaru.

Rushes & Drainage

ALTHOUGH lack of drainage undoubtedly makes a pasture more susceptible to rush invasion, it is not the only factor. The illustration shows two paddocks with a single drain running down the fence line. On one side, there are practically no rushes, while, on the other, rushes grow right up to the drain.

Efficient pasture management—topdressing and, particularly, in this case,

rotational grazing—plays probably as big a part in enabling pasture to resist rush invasion as does drainage. The approach to the problem of rush control is the same as the approach to weed control in pastures generally. Draining, topdressing, and, especially, good grazing-management, build up the vigour of the sward until weeds are crowded out.

—N. LAMONT, Instructor in Agriculture, Masterton.

COMMANDS YOUR ATTENTION!

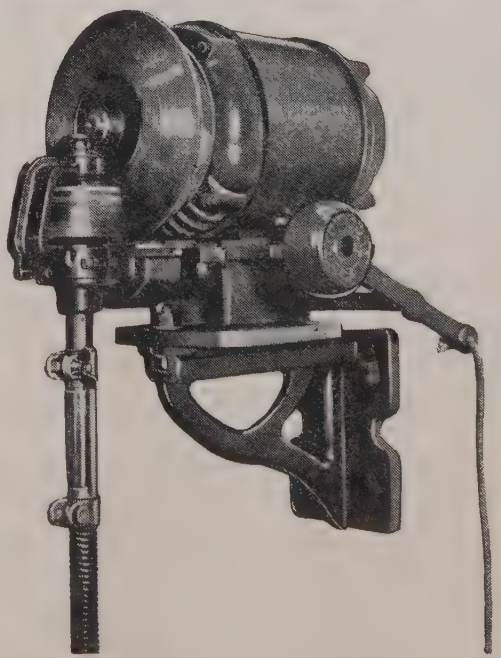
The LISTER Ball Bearing Horizontal Electric Plant

Each stand has a separate motor which drives the gear by means of a friction cone. THE FRICTION SPINDLE IS FITTED WITH BALL BEARINGS ABOVE AND BELOW THE CONE.

TESTS PROVE THAT THIS EXCLUSIVE LISTER FEATURE RESULTS IN LOW BEARING PRESSURES NOT APPROACHED BY ANY OTHER DESIGN.

The plants are fitted with the "tumbling tommy" type of "in and out" gear, thus eliminating the necessity of starting under full load and constant use of electrical switch gear.

LISTER ELECTRIC PLANTS ARE EQUIPPED WITH FULL SIZE (14 in. discs) GRINDERS.



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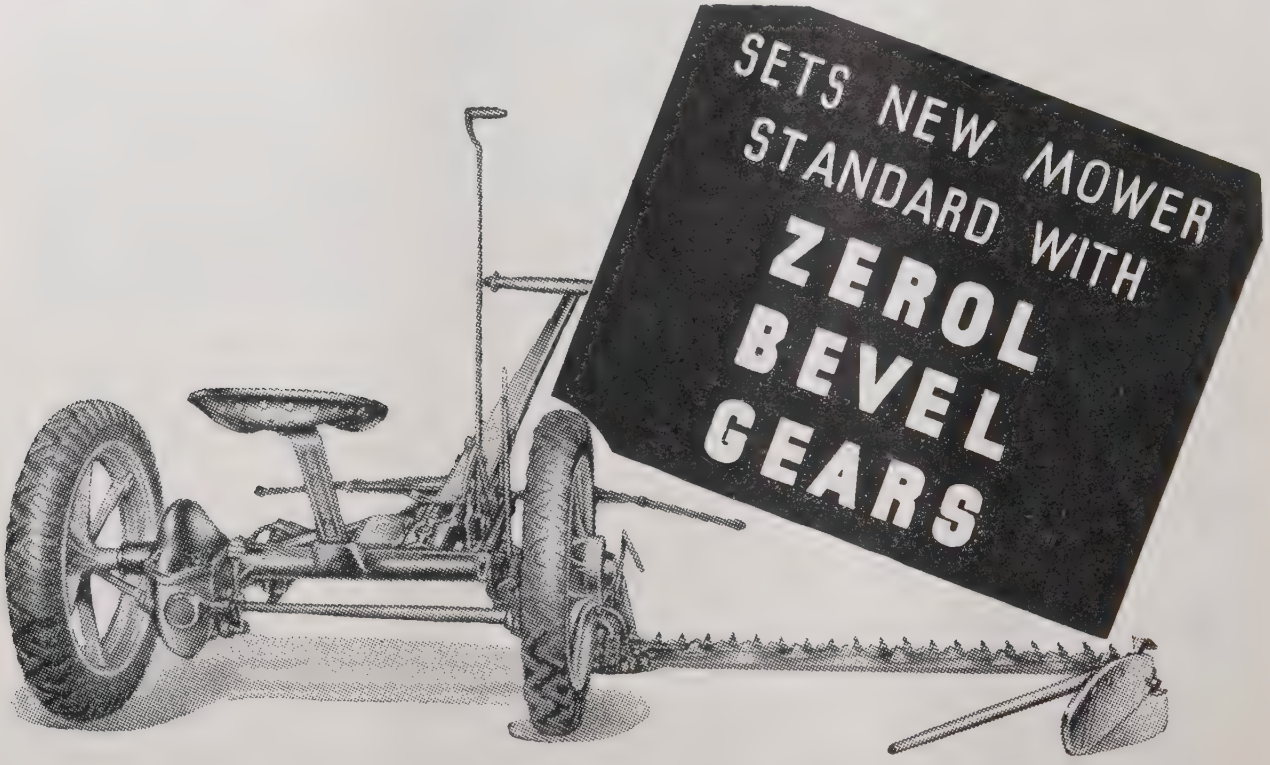

McCormick-Deering, who have for years set the standard for farm machinery, are at it again. This time it's a mower—the sweetest, smoothest-running mower ever hitched to a horse. It's the McCormick-Deering No. 9 with the new Zerol Bevel gears—a completely different transmission that's been proved by field tests as the most efficient yet. Arranged to give a "two-step" gear reduction, Zerol gears are two sets of highest grade steel with distinctive curved teeth that slide into each other easily, quietly, then grip firmly near the centre, where they're strongest. It means no wear at the ends and edges, means perfect contact, perfect transmission, even after long years of service.

LESS NECK WEIGHT

McCormick-Deering No. 9's unusually easy on the horses. "Two-Step" gear reduction overcomes down thrust in heavy going. Gears **behind** axle give a better balance, make pulling easier. Ball and Roller bearings also assure light draft, smooth running.

ONLY MOWER WITH AUTOMATIC PITMAN

Inspect this feature which is exclusive to McCormick-Deering mowers.

GEARS FULLY ENCLOSED—RUN IN OIL

Gears, fully enclosed in a dust-type, leak-proof gear case, run in deep bath of oil, ensuring perfect lubrication of transmission and fly-wheel shaft bearing.

LATCHLESS LEVERS CONTROL TWO LIFTS

The No. 9 is available in either plain or vertical lift. Latter feature allows cutter bar to be raised to full vertical position without stopping mower.

STAUNCH McCORMICK-DEERING CONSTRUCTION THROUGHOUT

Like all McCormick-Deering machinery it's precision engineering and workmanship right through—built for a lifetime of more-than-average performance.

INQUIRIES INVITED FOR ANY FARM EQUIPMENT

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But don't be slow in getting in your orders because stocks aren't unlimited.

INTERNATIONAL HARVESTER COMPANY OF N.Z. LTD.—Auckland, Palmerston North, Wellington, Christchurch and Dunedin. Dealers Everywhere.

Feeding of Oats to Sheep

IN Southland the turnip and swede crop is relied upon for the winter feeding of sheep and cattle. Where a 40 to 50-ton crop per acre of swedes can be grown, 1 acre is regarded as sufficient to winter 100 ewes, which receive in addition to hay or chaff, a slight picking from the grass paddocks.

As pregnancy progresses the concentrate ration should be increased to coincide with the increased demands being made on the ewe. The great majority of farmers rely on the oat crop for this purpose, and even with milling oats at 3/6 per bushel the cost is not considered excessive.

If on turnips for an hour or two each day, one bag of oatsheaf chaff is sufficient for 100 ewes. Without turnips, as for instance during a period of very hard frosts or a snowfall, this quantity should be doubled. The chaff should be damped preferably with molasses when available, and should be fed in troughs, raised from the ground. When feeding, allow at least a 9in. space for each sheep.

The management of the hogget flock calls for more skill than does the management of the ewe. After weaning it is essential that the hoggets receive no check due to shortage of feed or worm infestation. If placed on turnips they generally receive the first "breaks" ahead of the ewes. Quite a number of farmers however winter them on oat grain and an extensive grass run-off. The ration of oats is gradually increased from a few ounces up to ½lb. per day for each hogget.

When it is realised that in the coastal districts of Southland, the oats required can be produced when sown as a nurse-crop to grass, the popularity of this method of winter feeding occasions no surprise.

—A. STUART, Instructor in Agriculture, Invercargill.

Sheep Dipping

Practical points in sheep dipping, including the design and construction of sheep dipping baths, is the subject of the Department of Agriculture's Bulletin 181. Mr. J. E. Duncan, Wool Instructor, has in this bulletin endeavoured to cover concisely all the aspects of dipping. It is designed to fill a definite want, as most of this information has formerly been scattered or available from commercial firms only.

This bulletin is free and copies may be obtained from the Department of Agriculture, Wellington.

IT SHOULD BE REMEMBERED

WHEN YOU CONTEMPLATE TRAIN TRAVEL

That this is no time for unimportant main line journeys.

That unless your journey is unavoidable you should put it off and make room for someone who MUST travel.

That if you HAVE to go, you should do so during mid-week and not at week-ends—the only time when many troops on furlough are able to travel.

That you should reserve your seat ahead of travel date and in event of changed plans cancel your reservation in time for its transfer to someone else.

WAR NEEDS MUST HAVE FIRST PRIORITY.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the months May to September, 1943, have been compiled by the Livestock Division:—

District.	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Pigs
North Island.						
Meat-export Slaughterhouses—						
Auckland	93,629	477,611	76,586	30,970	109,664	36,465
Poverty Bay-Hawkes Bay	23,330	48,960	73,956	33,559	129,369	8,174
Taranaki-Manawatu ..	52,596	166,353	50,571	26,096	168,193	28,592
Wairarapa-Wellington ..	19,976	23,310	51,510	25,547	124,549	6,020
Totals	189,531	716,234	252,623	116,172	531,775	79,251
Abattoirs	61,199	19,515	282,341	120,456	38,716	16,359
North Island Totals ..	250,730	735,749	534,964	236,628	570,491	95,610
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	1,448	8,579	7,393	4,552	38,053	3,360
Canterbury-Westland ..	6,567	24,261	127,086	104,274	339,651	12,573
Otago-Southland	9,312	21,329	72,938	59,950	569,489	1,939
Totals	17,327	54,169	207,417	168,776	947,193	17,872
Abattoirs	25,689	4,779	119,054	70,208	14,204	6,246
South Island Totals ..	43,016	58,948	326,471	238,984	961,397	24,118
Dominion.						
Meat-expt. Slaughterhouses	206,858	770,403	460,040	284,948	1,478,968	97,123
Abattoirs	86,888	24,294	401,395	190,664	52,920	22,605
Grand Totals	293,746	794,697	861,435	475,612	1,531,888	119,728
Same Period, 1942— Meat-export Slaughterhouses and Abattoirs ..	259,478	791,992	753,914	462,567	1,589,555	219,169
Same Period, 1941— Meat-export Slaughterhouses and Abattoirs ..	301,364	770,823	1,009,417	636,370	1,441,377	197,941

Slaughterings of Pigs

The 23,473 pigs slaughtered at meat-export slaughterhouses and abattoirs during the month of September, 1943, were distributed in weight ranges, approximately, as follows:—

Up to 60lb.	106
61 to 120lb.	7,233
121 to 160lb.	13,104
161 to 180lb.	1,583
Over 180lb.	920
Sundries	527
	23,473

The grading of porkers was 90 per cent. of 1st quality, 10 per cent. of 2nd quality, and that of baconers was 86 per cent. of prime 1's, 10 per cent. of prime 2's, and 4 per cent. of 2nd quality.

In the different weight ranges of baconers the grading was as follows:—

121-160	87%, 9%, 4% of P1's, P2's and 2nds respectively.
161-180	77%, 19%, 4% of P1's, P2's and 2nds respectively.

Orchard Notes

Control of Pests and Diseases

SPRAYING schedules, as recommended in the August and September notes, should be continued on pome fruit trees for the control of black spot, pear scab, codling moth, leaf roller caterpillar and leaf hopper, and on stone fruits for the control of brown rot, aphis, leaf rust and other diseases.

On account of their susceptibility to russet, it is not advisable to use lime sulphur sprays at petal fall and onwards on such varieties of apples as Cox's Orange Pippin, Kidd's Orange Red, Dunn's Favourite and Jonathan. Colloidal sulphur 40% : 3 lb. to 100 gallons is a more suitable spray for these varieties at this period.

Thoroughness of application to all parts of the tree is of utmost importance and becomes increasingly difficult to secure as the season advances and the foliage becomes more dense. If a high pressure is maintained, with a fine delivery at the nozzle, a good coverage of all tree parts is more readily obtained.

For the control of leaf hopper add nicotine sulphate 1 in 800 to the spray when the first of the nymphs are observed.

Codling Moth

The insect overwinters in the larvae stage in a cocoon which is spun under the bark of the tree or in crevices on the trunk and branches. The majority of the larvae pass the winter on the tree, or in cases and in packing sheds.

Codling moth activity commences each season with the transformation of larvae to the pupa or chrysalis stage, about the beginning of October, and the first moths emerge about the beginning of November. The emergence of the brood usually takes place over a period of 8 to 12 weeks, but varies according to weather conditions. The life of an adult moth varies considerably, and it may be active on the wing for a period of 14 to 28 days. The moths do not necessarily commence to lay eggs as soon as they emerge; even when temperature conditions are favourable, a period of two to four days elapses before egg-laying commences. Eggs are laid most freely during warm and calm evenings when the temperature is in the region of 60° F. or more, and these have an incubation period of 7 to 14 days. The eggs are deposited on the fruit, leaves and twigs. Each female lays an average of 40 eggs.

The young larvae, on hatching, may enter the fruit on the side, particularly where fruits touch, or through the calyx end. In the Auckland district last season, where a severe infestation of codling was in evidence, it was found that a large percentage of the first brood made their entry through the calyx end of the fruit. This was most noticeable in varieties such as Delicious which are characterised by an open calycine sinus; both entry and exit were made through the calyx, and only by cutting the fruit could it be detected whether the apple had been attacked. The larvae spend about a month in the fruit and then emerge to suitable hibernation quarters on the tree. It is possible that the early emerging larvae may pupate, giving rise to a

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Until then, Ford Dealers will continue to provide all the Service facilities within their power — particularly for essential vehicles.

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second brood. The importance of the second brood in different years is to a large extent dependent on the temperatures prevailing during the spring and summer.

Control

The control of this pest depends on the maintenance of an adequate coverage of some stomach poison on the fruit throughout the flight period. For this purpose arsenate of lead spray at a strength of 1½ lb. to 100 gallons of water is recommended. In districts where temperatures are warm, the calyx stage spray applied when the petals fall and before the calyx closes, is necessary to prevent infection of the fruit at this period of growth; this can only be effective if the protection is given early in the season, before the calyx closes. A thorough calyx stage spray ensures protection of this portion of the fruit throughout the season. Subsequent sprays should be applied at 14 to 21 day intervals throughout the growing season.

Thinning for Quality

The thinning of the fruit crop is one of the most important of orchard operations, and ranks in importance with pruning, spraying, and cultural practices. At all times it is generally realized that quality fruit must be produced in order that the grower may receive remunerative prices for his product.

A considerable amount of thinning or reduction of the crop is, of course, carried out in many cases by thinning the fruit spurs during pruning operations, but inspection of this thinning of pome fruits is necessary when the setting of fruit has been a heavy one.

The advantages claimed by thinning include the regulation of the bearing-habit of the tree, thus ensuring a more evenly regulated crop each year, and fruit of a more regular size, and of better colour and quality, thereby increasing the market value of the crop as well as reducing the labour of sorting and grading. Thinning also affords the opportunity to eliminate, not only the blemished and badly misshapened fruit, but also the smaller fruits which are usually produced on weak buds. These latter generally remain the smaller fruit throughout their growth, and, in many instances, fail to reach a marketable size if allowed to remain on the trees. By thinning the fruit, a much better coverage can be obtained, and maintained, on the fruit with spray materials, with a consequent improvement in the control of insect pests, such as leaf roller caterpillar and codling moth.

Thinning of pome fruits should be commenced immediately after the normal shedding has taken place, usually about the beginning of December. Consideration should first be given to early varieties of apples, such as Gravenstein, Kentish Fillbasket and Ecklingville Seedling.

Estimating the percentage of fruit which should be removed necessitates studying the individuality of the trees, each tree being thinned, not

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only according to its size, but also its present condition, and apparent ability to carry the crop. If possible, it is advisable to thin the crop in two operations. The first should consist of a moderate thinning out of the clusters, and should be spaced according to the age and size of the laterals and shoots upon which they are carried. The second operation consists of the removal, during January, of all diseased and damaged fruit, thus reducing the quantity of cull fruit which will be harvested, graded, and then have to be discarded.

Cultivation

Where a good tilth has not already been secured, every opportunity should be taken after rain to secure such a condition. The soil should be friable, devoid of lumps, and with an even surface without a crust. Good cultivation not only maintains soil aeration, but helps to retain moisture, and generally provides conditions suitable for maximum crop and tree growth.

Grafting

All trees that have been grafted during the season should be examined, and, whenever any cracks or openings are seen, these should again be painted over to exclude the air. Shoot growth from the stock should not be allowed to overcrowd the scion, and should be checked periodically by pinching back.

—*A. T. DOUGLAS, Acting District Supervisor, Horticulture Division, Auckland.*

Citrus Notes

Bark Blotch and Borer

BORDEAUX mixture, 3-4-50, should be used to control verrucosis and other fungous diseases, with the addition of 1-800 nicotine sulphate, if necessary, for control of blossom thrips, especially on oranges and grapefruit. The main spray is applied at petal fall of the heaviest blossom period which, under average conditions, will be in November.

Bordeaux sprays should be kept well agitated, and then applied without delay after mixing. This spray should not be held in the tank overnight for use the next day. Spray tanks, pumps, pipes and hoses should be thoroughly flushed out with clean water after each application.

Bark Blotch

Bark blotch and borer both become increasingly difficult to control as trees age, although either may severely injure younger trees. Bark blotch needs a wound, however small, to enable it to enter a tree. Borer starts to work on dead or injured tree parts. The former provides conditions suitable for commencing of borer activities, while tunnelings of the insect, possibly begun at a carelessly made pruning cut, may supply an opportunity for bark blotch to secure a foothold. Thus, they may work together very destructively as a team, quickly causing injuries which, if left unchecked, reduce the vitality and productivity of the trees.

The fungus *Ascochyta corticola*, which creates the lesions known as bark blotch, is mainly a disease of lemon trees. Generally, it commences between the bud union and the lower parts of the limbs, later running as high as four or five feet up the branches, or spreading less rapidly round them. Early signs of the disease take the form of brown patches of dead bark, having a slightly raised margin with, possibly, but by no means always, gumming at some point within the affected area. Unfortunately, the gumming is not always present while the colour of affected bark may be little different from healthy bark, so that the disease can become well established and yellowing of foliage be the first indication that all is not well. The diseased zones spread most rapidly upwards, but will slowly encircle stems or limbs, causing typical yellowing of foliage as the latter progress reduces sap flow. Dead bark cracks and flakes off in later stages, leaving bare wood exposed.

Lesions discovered before they develop far may be treated successfully and the tree saved. All discoloured bark should be removed, followed by disinfection of the wound with acidulated mercuric chloride, 1-1000, and final painting over with bitumastic paint, 50-50 coal tar and Stockholm tar, or green crude petroleum jelly. Smaller limbs which become affected should be cut off well below the diseased area and the wound treated as above.

Early Treatment

Where bark blotch appears in an orchard, a careful watch must be kept and treatment of infections carried out as soon as discovered. Cutting out of very advanced lesions involves removal of so much bark that the tree is little better off than before. Early detection is essential.

The fruiting bodies of the fungus are somewhat sticky and are carried in affected bark. All diseased tree parts should be burned to prevent their being carried about the orchard, and to minimise the risk of spores being transferred to other agents which may pass them to clean trees. Poultry appear to be one of the worst agents responsible for spread of bark blotch. Probably the birds spread the disease by scattering affected bark flakes about the orchard and by carrying spores about on their bodies.

A few growers have used a coal tar emulsion on trees suffering from advanced attacks of the disease. This treatment is simple, only loose flakes of diseased bark are removed and destroyed, leaving all bark, dead or alive, which still clings closely to the wood. The whole affected area is painted with this emulsion, repeating the application two or three times at intervals of four to six weeks. This method appears to arrest progress of the disease, prolonging the lives of trees otherwise beyond saving, and does no harm to healthy bark, while there is evidence that it kills the fungus in diseased bark. It has been noticed that callousing over of the wound is more rapid beneath the dead bark than when the latter is removed.

Seasonal Work

- Spray for control of verrucosis and other fungous diseases.
- Complete pruning, especially all hard cutting, during November.
- Continue orchard cultivation, or mowing of permanent pasture.
- Mulch around trees if material is available.
- Keep harvesting up to date. Lemon picking in warmer weather should be a little closer as the keeping qualities of the more mature lemons are not so good during summer.

This method of dealing with severe infections is worth a trial. It takes little time or trouble, and has the additional advantage of discouraging borer.

Treatment for Borer

The borer, *Aemona hirta*, attacks all citrus trees and is well known to most commercial growers. Its presence is revealed by the trash it expels from its borings in the larger limbs and, also, by wilting or snapping off of smaller branches. Treatment is not difficult, but several repetitions may be required to clean up badly affected trees. Small branches affected with borers should be cut back and destroyed, or split and the borer grub found and killed. Benzine should be injected into tunnels in large limbs, the outlets should be plugged with petroleum jelly, and the wounds treated in the usual way.

I. L. NOTTAGE, Orchard Instructor, Tauranga.

Guide for the Home Garden

Work In The Home Garden For December

"If I do my best, the vegetables do their best, then—the garden and me are all happy."

—MABEL LUCY ATWELL.

CIRCUMSTANCES are compelling those with gardens to take notice of the activities of the "Dig for Victory" campaign. The necessity for proper instruction in the best-known methods of vegetable growing is recognised, and special efforts in this direction are being made by responsible citizens and departmental officers. Practical demonstrations, such as those given recently in Auckland and Wellington, have a higher instructive value than any verbal discussion. Home gardeners desiring information relating to vegetable growing or copies of the broadcast instructional talks should communicate with the secretary, "Dig for Victory" Campaign, Box 1500, Wellington.

Tomatoes

During December, plants should be growing vigorously and beginning to climb the stakes. A sharp look-out should be kept for the appearance of surplus shoots. These develop at the junction of the leaf and stem, and begin low down on the plant. They should never be permitted to develop and can be easily removed by simply pushing to one side with the thumb. Allowed to grow, they rob the soil of valuable plant food which was placed there for the production of tomatoes, upset the balancing growth of the plant, tend to prevent the free circulation of air among the foliage, and act as an obstruction of spray liquid when it is applied to the inner foliage. During periods of high humidity, and cloudy days with little or no sunshine, plants which have not been sprayed properly are ready victims to disease attacks.

Home gardeners are urged to do everything possible to save their tomato plants, and bring the fruit to maturity. Those who fail to take advantage of the opportunity to grow their own, and intend depending on surplus market supplies, may be very disappointed, as the demand during the coming season will be greater than would ordinarily obtain.

Care With Fertilizers

In many districts, owing to unfavourable weather, seed sowing for early crops has been unduly delayed with the result that growth has not proceeded to the usual extent. It is dangerous, however, to endeavour to stimulate activity in certain vegetables by the addition of extra fertiliser, particularly nitrate of soda or sulphate of ammonia. These nitrogenous fertilisers have their legitimate uses, but their stimulating properties can easily be abused.

Carrots

Enquiries concerning the use of nitrogenous fertilisers for hastening the growth of carrots is the reason why the above warning has been given. Carrots and other root crops are not benefited by additional applications of nitrogen, and attempts at "forcing" will often prove disastrous.

December, generally, but January and early February in northern districts, is an appropriate time for sowing the main crop of carrots. The site selected should not have produced this crop for at least two years previously, and the further it is removed from the place where last season's carrots were grown, the better the chances of escaping the depredations of the carrot rust-fly.

The seed should be sown in shallow drills 12 inches apart, and the seedlings thinned—for main crop only—to spacings of 3 to 4 inches. When the seedlings are removed, the soil should be pressed firmly round the roots and crowns of the plants allowed to remain. After thinning, a good watering will be beneficial.

Don'ts

Don't
forget that eternal vigilance is the price of a winter crop of green vegetables.

Don't
decide to "do it tomorrow." The pests are working overtime.

Don't
expect results from fertilisers if you omit watering your garden.

Don't
assume that fertilisers applied in large quantities will produce good crops without thorough cultivation.

Parsnips

If the seed of this desirable winter vegetable has not already been sown, no time should be lost in doing so. This root crop takes a considerable time to develop, and, as germination of the seed is sometimes disappointing, delay may mean the loss of winter supplies. Thin to 4-6 inches apart and keep the crop entirely free of weeds.

Leeks

If not already planted, leeks should be set out as early as possible. Watering should not be neglected at any time, but more especially after transplanting. As the plants begin to develop, liquid manure should be regularly applied at intervals not exceeding 14 days. It should be remembered that leeks are recognised as gross feeders and will stand very heavy manuring.

Swedes

This is another crop, the seed for which should be sown during December. Laings Garden or Superlative are the favourite garden swede varieties. Thin sowing is necessary to save laborious and undesirable thinning. After thinning, the soil should be made firm round the roots of the remaining plants. Close watch of the top growth is necessary so that immediate steps may be taken to spray with nicotine sulphate to destroy aphis should they appear. If permitted to go unmolested, this pest will soon destroy the entire foliage. Later, caterpillars may become prevalent on the plants; these can be controlled by the use of arsenate of lead in combination with nicotine sulphate. The latter insecticide is used in accordance with directions on the container, usually a 1 oz. bottle, and arsenate of lead—powder form—1 oz. to 2½ gallons of water. When nicotine sulphate is used, it should be applied during the hottest part of the day.

Winter Green Crops

December in cool districts and January elsewhere should mark the time limit for setting out plants of late autumn and winter maturing green vegetable crops. As transplanting to the garden will be carried out at a time when weather conditions may not be entirely suitable, it is necessary that the seedlings of whatever variety should be healthy, vigorous and stocky.

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If the seed has been sown too thickly, weak, spindly plants are most likely to result. Seedlings such as these, even if they do survive the shock of being removed from the shelter of a seed-bed, can never be expected to grow into the robust, attractive vegetables which look well in the garden, and are more appreciated when cooked and served at a meal.

During the early stages of growth, it would be time well spent if the required number of seedlings were taken up and transplanted in a corner of the garden. Set 3 inches apart each way, the young plants would soon pick up and develop into the desirable type for transplanting. By adopting this practice time would be saved and disappointment avoided. The same procedure might profitably be adopted with plants which may be purchased.

Unsatisfactory production of vegetable crops often results from allowing the seedlings to remain too long in boxes or pots before they are transplanted to their permanent positions. With all members of the cabbage family, the stems become hard and the leaves turn a pale yellow-green colour. If from no other cause, this can usually be attributed to the plant becoming root-bound. Premature "bolting" of the plants to seed is often the result.

As intimated earlier, transplanting to the garden should begin during December, Brussels sprouts, which will probably take the longest, and broccoli, which may be planted to harvest at different periods, should be set out early. The sprouts, with the cauliflower and broccoli, are better set in a well-fertilised shallow trench which may be made with an ordinary garden hoe.

In the absence of inorganic fertilisers, blood and bone manure may be applied, using 6 ozs. to each 9 ft. of row, working it well into the soil before the plants are set out.

Peas

Opportunity for keeping the vines clear of the ground should be provided by the use of brushwood or wire netting. Should neither be available, a stout stake may be driven at each end of a row and lighter stakes used at spaces of 10 or 12 feet. A wire on either side of the plants and fastened to the stakes about 8 inches high will catch the vines before they begin to fall to one side. These wires can be tied loosely together at several points between the stakes. Followed by other wires, the vines may be supported to any height necessary.

During periods of dry weather, watering should not be neglected. Provided the peas have been slightly "banked," the best method of watering is to permit water to gather in the furrows between the rows. This is done by blocking up one end—the lower—and running water between the rows. This method should only be adopted where good drainage conditions obtain. For succession crops, late January and February is the most appropriate time to sow seed. The plant does best during cold weather.

Beans

Dwarf.—Neither foliage nor pods should be permitted to drag along the top soil. Every time the plants are hoed, the soil should be drawn closer towards the roots. Undesirably damp conditions obtain in the shadow of the foliage which constitutes a first-class breeding ground for disease. So soon as the pods begin to develop, they should be picked. If this is not done the energy of the plant will be used in the production of seed instead of greater production of edible pods.

Climbing. — Attention to training tendrils up the climbing structure does not occupy a great deal of time, but it is well worth while to give the matter regular attention. To start the plants climbing, it may be necessary to make the initial fastening with some kind of tying material. This variety is coming greatly into favour in home-gardens because of the larger returns which may be obtained from them compared with the garden space occupied, and for the longer period over which production is spread. For the ordinary sized family, only one sowing of seed may be necessary.

Potatoes

Some autumn or winter maturing green vegetable crop usually follows potatoes in the home-garden. In order to obtain the greatest weight of tubers from the area under cultivation, the crop, so long as the tops show indications of growth, can remain in the ground, and the plants of the following crop set between the rows. The ridging of the potatoes will give some protection to the young plants. When the potatoes are being dug, the operation will require to be carried out very carefully so that the roots of the plants between the rows will not be disturbed. After the potato crop is harvested, the haulm should be immediately burned and the plants—cabbage or whatever variety they may be—given a good watering. If the roots of the plants have been disturbed in the process of digging the potatoes, the soil close to the stems should, after watering, be pressed down with the heel.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Seasonal Work for Beekeepers

Swarm Control

MODERN methods of honey production make it possible for bees to perform in a better and easier manner whatever they would naturally do in their normal routine, although the natural habits of the honey bee remain unchanged. Colony manipulation and protection have made it possible for the bees to produce more honey without any apparent lessening of the natural desire to swarm and increase the species.

The swarming instinct varies with different races of bees and in the two species found in New Zealand, the black and the Italian, the desire to swarm is stronger in the former, which will leave the hive shortly after the queen cells are capped over. The latter race does not seem to have the same fixed habits and will sometimes swarm before the cells are capped, and at other times wait until the queen cells are well developed.

Causes of Swarming

Contributory causes of swarming are overcrowding of the brood chambers, insufficient ventilation, excessive number of drones and aged queens. Methods employed to control swarming must be based on efforts to eliminate the above factors. In order to relieve congestion, the storage of honey in the brood chambers should be limited, thus allowing the queen to lay without restriction. Additional supers should be added slightly ahead of immediate requirements, and comb manipulation undertaken, designed to draw part of the young bees from the brood nest. To provide ample ventilation, hive entrances may be chocked up with one-inch blocks at the front corners during the heaviest part of the honey flow, which usually occurs during the hottest weather. Excessive numbers of drones can be prevented by the use of full sheets of foundation throughout the hives, and the rejection of all broken combs and those containing large areas of drone cells. Old queens can be avoided by the systematic requeening of all colonies at least every two years.

The location of apiary sites also has a bearing on the incidence of swarming. Hives in apiaries enclosed by high trees or surrounded by hedges which protect the bees from all winds and draughts are usually more prone to swarming than bees in apiaries located in open fields or shaded by tall trees.

Control Methods

No set rules to prevent swarming can be laid down, but various manipulations likely to act as a check on the natural instinct of bees to swarm are possible. A system which might be successful in one locality, however, may be quite unsuitable for another. The most suitable systems to apply to various districts must be left to individual beekeepers, but the fundamentals of swarm control are the same everywhere.

Control Without Excluders

Beekeepers with a few hives should undertake periodical examinations of colonies every eight to ten days until the commencement of the main honey flow, to ascertain if the bees have started raising queen cells. If cells have been started they should be destroyed. Where cells are discovered before the eggs deposited in them are hatched, there is a good chance of the colony abandoning the idea of swarming, but once the larvae have hatched and royal jelly has been supplied, the bees generally defy all efforts to hold them. When a colony appears determined to swarm the following treatment is sometimes successful:—

Take two frames of unsealed brood from the brood nest and place them one on each side of the super above the brood chambers. The position of this brood draws a substantial number of nurse bees from the brood nest, thus relieving the congestion there. The two frames removed

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should be replaced by two empty brood combs.

This is also an effective method of discouraging swarming if carried out when the colonies are strong, and before any queen cells have been started. The procedure at this stage is varied slightly. Instead of taking the two frames of unsealed brood from the brood nest, they may be obtained from another colony, preferably a weak one that is not likely to harvest a surplus of honey, thus the nurse bees are drawn from the brood chamber without any disturbance to the queen.

Experienced commercial beekeepers operating a large number of colonies can avoid the laborious routine of examining each brood comb in every hive by inserting the hive tool between the two brood chambers and tilting the upper one back sufficiently to glance up between the frames. If cells are not observed during this brief inspection, the chances are that none is present. The time saved by this quick method more than justifies the small percentage of loss that may result from failure to observe an odd queen cell.

Reversing Brood Chambers

This method of control is based on compelling the queen to make full use of both brood chambers—the manipulation consists of reversing the brood chambers every two weeks. Before it can be successfully applied, however, the hive must have ample honey and pollen. The queen usually lays more freely in the upper brood chamber, which, when well filled with brood, should be placed on the bottom board and the lower chamber raised and placed on top. As the mature brood hatches, room becomes constantly available for the queen to lay in. This manipulation is akin to an alternate short cut to putting the brood down by handling each comb separately.

Clipped Queen System

Clipping queens is valuable for keeping a tab on their ages and as a check against supersedure or other replacement, but as a swarm control measure it is of doubtful value. The issuing of a swarm is not prevented and usually the queen is lost, the bees returning to the hive and frequently swarming again when a virgin leaves on her mating flight.

With Excluders

The Demaree method of swarm control involves the use of excluders. The Waldron patent, constructed of wire surrounded by a wooden frame, is the most efficient type to employ. Only strong colonies should be treated in this manner, otherwise there is nothing to be gained by "demareeing." The Demaree system consists of confining the queen to the bottom brood chamber under an excluder. The unsealed brood is left in this box and a super of drawn combs or foundation placed above with the sealed brood on top in a third super. Any frames of honey are placed in a fourth super. If foundation is used immediately above the excluder it is better replaced by the super which contained the sealed brood as soon as it is drawn out and partly filled with nectar.

The colony must be examined nine days later and any cells raised on the brood above the excluder destroyed. It is preferable to use a half super directly above the queen excluder, as colony morale is less likely to be affected and fewer cells are raised on the brood above.

In ordinary circumstances strong colonies should be given plenty of super room and if necessary the queen allowed to occupy part of the third super. She will usually be forced down when the honey flow commences in earnest.

—R. S. WALSH, Apiary Instructor, Auckland.

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Notes for the Poultry Farmer

Principles and Practice of Chicken-Rearing

(Continued.)

By F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

FOLLOWING the brooding period, when a source of warmth is essential, and the subsequent shorter period of weaning from artificial heat, pullets and cockerels are ready to leave the brooder-house. In general, but subject to district and weather conditions, these birds will be between six and seven weeks of age. The major growing period leading up to the mature bird is now ahead of them. Irrespective of the system of management adopted during this period of growth, the principal aim of a poultry-keeper is to ensure that these pullets and cockerels alike develop fully in body, and build up a strong constitution. To obtain full body growth, steps have to be taken to discourage early sexual development, since as soon as sexual activity begins, whether in pullet or in cockerel, body growth tends to slow down. The modern utility pullet and cockerel, when mature, are expected to carry through a strenuous life of production, the pullet as a heavy producing egg-machine and the cockerel as the head of a breeding-pen during a long hatching season.

If both pullets and cockerels are to succeed satisfactorily in their respective roles, and complete the season without unduly lowering their breeding condition, they must both start with an abundant reserve of stamina. **This reserve of stamina must be built up in a well-developed body, during the growing period.** In fact, according to the care given during the entire rearing period, so will be the reward received in return during the ultimate productive life of the mature bird. It has already been stressed that there is nothing mechanical about brooding chicks, and the same statement applies just as emphatically in respect to the subsequent growing period. Although growing birds call for less constant attention, no relaxation in careful feeding and management should be allowed, if the best results are to be obtained.

Management

Broadly speaking, there are two main methods of managing growing birds. Pullets can be successfully housed wholly intensively during the growing period, and this is a method sometimes adopted by poultry-keepers who have limited areas of land, and in consequence favour the intensive system for both the rearing and the productive periods. The majority of poultry-keepers, however, attempt to afford some run for their growing pullets on the ground outside their houses. While either system may prove successful with pullets, poultry-keepers are strongly urged to raise their growing cockerels on adequate outside runs.

Admitting that certain poultry-keepers, who have a real understanding of their stock and stock management, are successful with intensive methods of rearing from day-old chick to the mature bird, it can be stated without hesitation that where an adequate area of grassland is available, the free range method of running growing stock gives the best results. This applies particularly to birds which will ultimately be required for breeding purposes during their second laying season. Accordingly, it is customary under this system to house growing pullets or cockerels in comparatively small units—say, fifty birds—in range-houses which are easily moved, and which afford little more than comfortable sleeping-quarters.

These houses must be well ventilated, but without draughts, to obtain satisfactory growth and to ensure an absence of colds in the birds. In New Zealand, colony- or range-houses are usually fitted with perches, although overseas much use is made of slatted floors for this purpose. It is essential to see that adequate perching space is given, **since no bird must be allowed to sleep on the floor.** Practical experience has shown that both pullets and cockerels thrive better and grow more evenly if kept in small units rather than in flocks of over a hundred to any given house. The design of a range-house suitable for maintaining growing birds on free range may be obtained on application to the Department of Agriculture.

While free range for growing stock is strongly recommended as a sound and logical method of developing body growth and stamina, poultry-keepers are warned against overcrowding a paddock, or using ground over which adult stock have previously been run, unless such ground has been spelled for not less than a year. The reason for this latter warning is that many adult birds carry a mild infestation of internal parasites, such as worms and coccidia. Obviously, these parasites will pass out of the birds on to the ground, where they may become a menace to any growing stock subsequently running over this ground.

When first moved over to a range-house, birds should be kept shut in for about 24 hours, in order to accustom them to the house. It is best to release the birds for the first time at feeding-time, late in the afternoon, when no trouble should be experienced in getting them to return to the house. At this early stage, however, should a particularly heavy rain-storm occur, it is wise to check up at once and see that these young birds have found their way back to their new house.

The next essential is to ensure that every bird is perched each evening, until the entire unit can be trusted to go up on their own account. Perching pullets placed in a range-house or

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in an intensive unit is laborious work, but nevertheless, it is one of the most important management jobs at this stage. Birds left on the floor will collect in heaps or in the corners, where at the best they will sweat and at the worst suffocate one another. Heavy losses may occur in this way, particularly in cold weather, while if birds are allowed to sweat on the floor they will not thrive satisfactorily. In addition, such birds are most liable to contract colds, which may ultimately spread throughout the flock. Any colds usually mean a check in the development of the birds affected.

While poultry-keepers generally will go to considerable trouble to provide excellent free range and good housing for their growing pullets, too many provide wholly inadequate runs for their cockerels. In some cases, poor housing, and small, dirty runs are used for the growing cockerels. This is undoubtedly a big mistake in management, since it is just as important to give first-class conditions to cockerels as to pullets. These males at a later date form at least half the breeding pens, upon which the subsequent success of the farm depends.

Finally, the pullets on range should be moved to their laying quarters as they start to "redden up" or develop their combs. It is desirable to have them quietly settled in the laying-houses a week or two before they come into lay. Where a poultry-keeper desires to test the pullet flock for pullorum disease, this test may be carried out with advantage at the time of moving the birds into the laying-houses, providing these birds are starting to "redden up." This latter condition is essential, as it indicates that the ovary has become active, a desirable condition before blood-testing for pullorum is carried out.

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Feeding

Feeding during the growing period differs from that of any other stage in the bird's life, in that the protein content of the ration is maintained at a low level. Unless the protein is strictly limited, pullets will tend to develop sexually before attaining full body size. For this reason, care in the use of milk and milk products must be taken after the birds have reached 16 weeks of age, while not more than 1 or 2 per cent. of meat-meal is required at this age. When pullets are observed to be developing sexually (i.e., comb begins to grow and redden) too quickly, the protein content should be reduced, and a greater proportion of grain to mash fed. It may be added here that in conjunction with this change in feeding, where possible the pullets may be moved to fresh housing, which management will help to check this precocity.

A further point of importance is the stage at which the birds are moved from the brooder-houses to the range- or growing-houses. The birds are then at an age when they can be easily checked, and any possible check must be reduced to a minimum. Thus, when first moved out no change in feeding should take place for at least a week. At the end of this period the birds will have become acclimatised to their new conditions, when it will then be safe to change over gradually from the brooder or starting mash to a growing mash. If a change both in housing and feeding is made at the same time, then there is every chance that the birds will receive an unnecessarily severe check.

The following programme of feeding is practised at the Government Poultry Station, Wallaceville:—

Free Range

6-20 weeks (approximately).—After moving out to range into the colony-houses, **no change** in feeding is made for about a week. Changes of housing, general conditions and feeding should not all be made at once. Following this short period, the chickens are given a grain feed early morning and evening, with a wet mash in the morning and afternoon. The mash mixture during the growing period is as follows:—

Pollard	24 lb.
Wheat-meal	33 lb.
Bran	25 lb.
Maize-meal	10 lb.
Milk powder	3 lb.
Meat-meal	3 lb.
Minerals	2 lb.
	100 lb.

Grain Mixture:

Wheat	80 lb.
Kibbled maize	20 lb.
	100 lb.

It will often be found necessary to take out the meat-meal altogether after four months of age—more especially if the pullets are maturing too quickly; while both pullets and cockerels receive only one wet mash daily, about mid-day, from 16 weeks of age onwards. A morning and evening grain feed is given in addition.

SOME FAULTS TO AVOID.

1. Overcrowding is one of the commonest faults committed by poultry-keepers. Since overcrowding can cause mortality, and will reduce body growth and stamina, every effort should be made to avoid this condition.

2. Lice-infestation: As pullets and cockerels approach maturity, a careful check should be made for the presence of lice on the birds. Lice, in numbers, have the effect of reducing the condition and stamina of the birds infested. Treatment should be carried out by the application of nicotine sulphate to the perches just before perching-time, or the birds dusted individually with sodium fluoride.

3. Red Mite-infestation: "Red" mites live on blood sucked from the birds while perching at night. In the daytime these parasites may be found hiding in cracks in the wood or under the perches where they rest upon their bearers. They are readily destroyed by a mixture of one-third kerosene and two-thirds creosote.

4. Insufficient Water-supply: Nothing is more detrimental to pullets and cockerels than to be without water at any time, particularly during periods of hot weather.

5. Insufficient Green Food: Although these growing birds may be running over grassland, the quality of this grass may become poor, particularly later in the summer or during a dry period. It is recommended that additional green food should be supplied daily, preferably chopped up and mixed in with wet mash, if the latter is fed. If dry mash is given, then chopped green food may be fed as a separate item in ordinary V-shaped feeding-troughs.

6. Do not leave Sickly Birds in the Flock: The practice of culling growing stock for all sickly birds at regular intervals should be established. Such ailing birds may be carrying disease, and in consequence are a serious menace to the healthy birds. Careful and regular culling is an excellent insurance against an outbreak of disease, since weaklings are usually the first to contract trouble.

Federation of Young Farmers' Clubs

National Y.F.C. Essay Competition

THE national essay competition, "Citizenship and the Part that can be Played by the Young Farmer," was disappointing from the point of view of entries, there being only four received in the senior class and three in the junior. The general quality of the essays made up for this to a certain extent.

The judging was kindly undertaken by Mr. G. V. Wild, Senior Inspector of Technical Schools, Education Department, who is keenly interested in the Young Farmers' Clubs, and has assisted the movement in many ways. "I would say of the entrants that they appeared to enjoy their essay writing, and that all competitors achieved something," said Mr. Wild. "The winning essay in the senior class gave not only the most complete survey of the subject, but also dealt with it in the most orderly fashion, and in the most attractive style. There was very little to pick and choose amongst the others. One would have liked to see many more competitors in both sections."

The judge's awards are: Senior class: E. L. Maitland, Warepa club, 1; T. G. Maxwell, Scargill-Omihi club, 2; Ian D. Colquhoun, Feilding club, 3. Junior class—Jim Cowie, Cambridge club, 1; Kevin J. Corkery, Orepuki club, 2; C. R. Frew, Enfield club, 3.

The winning essays in the two classes are published below:—

Senior Class

E. L. MAITLAND, WAREPA CLUB.

Citizenship means the art or practice of being, or living as, a citizen. Most people who decide to undertake a hobby or pastime, or sideline occupation, try to excel at what they decide to do, and, as a guide to their efforts, have in their minds an ideal, or state of perfection to which they strive to attain. Therefore, I propose to describe the qualifications of what I would consider an ideal citizen, with special reference to the young farmer in regard to each characteristic.

My ideal citizen would make a success of life, not amass a fortune in wealth, but earn a comfortable living for himself and family, not work unreasonably long hours, keep good health, and be able to retire when he reached the age of 60 years, still fit to enjoy his retirement. To this end, the industrial worker should take an interest and pride in his work, perhaps study to gain promotion.

The young farmer should plan well ahead with a definite object to be attained, keep abreast of modern farming methods and developments by reading the N.Z. Journal of Agriculture and other farming publications, and generally attempt to improve the production capacity of his land.

With the declining birthrate in New Zealand, every man who has the country's interests at heart should marry and raise at least two children to become, in due course, healthy, responsible citizens. They should receive a good education in the principles of Christianity, the rules of good health, and in some of the finer arts such as singing, music, dancing, literature, etc. Each youth, boy or girl, should be taught a trade or occupation. I heartily agree with the steps the Government is contemplating in connection with vocational guidance.

A young farmer should help to dispel the impression that a young lady who gives up the amenities she is used to in town, to marry a farmer, is a martyr. He should make conditions around the home as pleasant as possible, lay concrete paths, a lawn and garden, ensure a good water supply, keep the house painted, make the kitchen well-lighted, bright with light wallpaper or paint, instal a wireless set, perhaps a washing-machine. When his wife is busy with a young family, domestic help should be engaged.

For recreation a citizen should indulge in some active sport, such as tennis, football, hockey, bowls, hiking, swimming; also some hobby or study quite apart from his occupation. He, and his wife and family, should have at least two weeks' holiday annually.

Many young farmers lead an active, outdoor life, making sports, for the benefit of their health, unnecessary, but sports are beneficial to them for the enjoyment and sociability involved. Every young farmer should have an annual holiday where he can relax, leaving behind the cares and labour of his farm. This applies particularly to dairyfarmers, milking dairy-herds twice a day for 9 or 10 months continuously.

An ideal citizen would be public-spirited, take an active part in his trade union, local amenities society, school committee, etc., not expecting material reward, but to be of service to his community. In sparsely-populated country districts, it behoves every young farmer to participate in local affairs, such as rifle-club, hall committee, Young Farmers' club, Farmers' Union, etc., making these bodies representative of the whole

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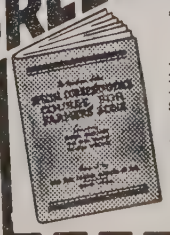

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district, and strong enough to achieve some progress.

The young farmer will have to decide on a policy of action and carry it out on his farm; he may go against popular opinion and meet with opposition when introducing a new farming method to his district. He will probably find that the success of his farming operations depends on how he organises and arranges the labour and material resources at his disposal. The development of these qualities of deciding on a policy and carrying it out, initiative, and organisation coupled with his knowledge of the conduct of public affairs, gained through his association with local bodies, could result in his being made Parliamentary representative for his district. The farming community should produce as many Members of Parliament as any other section of the people.

"Citizen" literally means a person living in a city, but in the wider sense of the word a citizen of New Zealand is a person living in this country. A person living in a city has neighbours with whom he must live in peace and harmony. He must consider them, not follow his own desires or pleasures in total disregard of the effect this has on his neighbours. The ideal citizen would keep in touch with current affairs here and abroad, study economic and political problems, be broadminded, and able to see other people's points of view. The present war is a very graphic example of what can happen when, instead of being neighbourly, people learn to hate each other. The people of all nations must learn that, besides being neighbourly in their own homes, they should be neighbourly with people in other lands.

Though homes in the country are not as close together as city homes, modern means of transport and communication have brought the farmers much closer to each other. The young farmer should be neighbourly, in fact will find it to his advantage to co-operate with his neighbours for harvesting, threshing, shearing, etc. At present, while implements are dear, one expensive implement can be made to perform its particular operation on 3 or 4 farms, e.g., a waggon with a wide topdresser attached could sow all the topdressing required on perhaps six farms. The young farmers should be on good terms with citizens of New Zealand in all other walks of life, and vice versa.

When the ideal citizen retires he should be able to look back with pride and pleasure to some social advancement or improvement he has effected, or taken an active part in bringing about. The industrial worker may have been instrumental in securing a good award for his fellow-workers. The business man, through the city councils, may have been largely responsible for the laying-out of children's playgrounds, botanical gardens, or for the erection of a swimming-bath in his city.

The farmer could take a pride in past undertakings which, though perhaps not a financial success to himself, would benefit generations to come, e.g., planting of plantations to kill out gorse, shelter stock, and provide timber and firewood; erection of fences and buildings with good lasting material; doubling or trebling of the carrying capacity of his farm. He may have improved conditions for all farmers in his district by sponsoring and getting put into effect a drainage, or irrigation scheme, installation of electric power, perhaps introduced measures to combat erosion.

If the young farmer of today wishes to be in a similar position when he retires, now is the time for plans and ideas to this end to be taking shape in his mind.

The greatest comfort of all to the retiring ideal citizen, no matter what his calling, would be the knowledge that he had given to his country several fine sons and daughters who were already leading useful lives, doing their share to improve the lot of their fellow-beings, playing their part as worthy citizens of New Zealand, and who, on retiring, would be able to feel that they had put into action the thought expressed in the following lines:—

Lives of great men all remind us,
We can make our lives sublime,
And, departing, leave behind us,
Footprints on the sands of time.

Junior Class

JIM COWIE, CAMBRIDGE CLUB.

Citizenship embraces many ideals, practical or theoretical, and amongst them may be found individual character, respect for law and order, a love for clean sports, tendencies for the education of the people, and above all a sense of duty in regard to assisting the community in social duties as well as a "good neighbour" policy to one another. These are what we, the young farmers of this Dominion, can concentrate on. I do not mean that the young farmers are actually neglecting any of these, but perhaps at times too little attention is paid to them.

The first ideal I have mentioned is individual character, for without a good character no one can command respect, and the other necessities of citizenship are partially dependent on this. Character is usually the result of a good upbringing where toleration, strength of purpose, kindness and respect for other people's property is taught, and where selfishness, unkindness and deceitfulness are not tolerated. A man with great individual character stands high above men, but seeing that everyone cannot attain such heights it is nevertheless his duty as a citizen to strive to this end, even though he may fall far from the mark. A country has little time for morally weak citizens, for they are a menace to themselves and the populace generally by setting a bad example to the younger members of our community. The present position in regard to moral laxity has a great deal to do with character. Of late years much has been heard of people "slathering" certain professions, such as politics and farming. These professions and others have been presented to the rising youths, and even older people who should be able to think for themselves, as being a "mug's game." This is the wrong way to go about bringing up our future citizens, and I hope all Young Farmers will correct with reason anyone they hear saying this. By this "slather" the young people think that these professions are not worth striving for, and this creates disrespect towards them, and if these young people are born to that particular profession they quite often go through life as disillusioned, disgruntled labourers, or else they take poorer city positions and the country loses much-needed men, who would most likely have distinguished themselves as farmers, politicians or business men. These are the type of citizens who cause strife and trouble amongst the community.

Respect for law and order is really a part of character, but the only difference is that it is more the result of having a good character than being character itself. As I have said previously, if the rising youth are not taught, or if they have not enough common sense to respect a thing, they soon take liberties with it which they would never have taken if they had been told that to be a good citizen is the greatest ambition that one can strive for. I am thankful to say that disrespect for law and order does not affect the young farmer at all, because the best way to learn right and wrong is done within our own clubs. No member would knowingly wrong another, and seeing that this is extended to anyone with whom we come into contact, I consider we are doing our duty well in this direction.

Sports play a large part in our life of today, and it appears that they will continue to play a large part after the war. In the cities gymnastics, boxing and various other sports which can be performed at night can play a large part in keeping the youths occupied and off the streets, but in the country the young farmer can participate in little other sport than that which is provided on Saturdays, unless he is fortunate enough to be in a populous and enthusiastic sporting district. I consider that sports occupy the minds of the country youths more than the town youths, but owing to Young Farmers leading an active life in the open I consider sports does more physical good for a town youth. However, the only thing in sport is not the physical result but also the effect it has on the participant. Such games as football, hockey and soccer promote a good team-spirit amongst the team and also a friendly competitive spirit between the teams. The latter is of great use in practical farming where half the joy of herd-testing, pig-raising and general farm management is in being able to compare your results with the results of another enthusiastic farmer. Other sports

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such as boxing, swimming, running or any other field events bring to light any individual talent in this direction. The participant has to rely on himself in these, and they can help him to assess his individual worth, more so than in team games. I advise all young farmers who are not already keen supporters of different types of athletics, to try and interest themselves in them, for whether successful or not it teaches them to win or lose like men, and this is another way in which to be good citizens.

Education is the basis of citizenship, because if we know what is right or wrong, or valuable or useless, we can discard ideas that may have a bad effect on our life as citizens, and by doing this we can aid others by our example. To be educated is one of the greatest assets of any Young Farmer, for he can express his views when any subject is under discussion, and he can feel that he is not merely a silent club member or farmer that has to take the lead from someone else, but one who can think for himself. Not all Young Farmers, or anyone for that matter, are clever at every subject, but those who have a talent for a certain subject have a duty to perform to their country by specialising in it, and passing on their results for the use of the community in general. I consider that we are doing a great deal of good by listening to lectures at our clubs and over the radio, but I would like to hear more prepared and impromptu speeches from the club members, because here is where the individual members can obtain training in putting their thoughts into words, and it will give them confidence as speakers. When these members are called upon in future years to deliver addresses at various clubs and organisations they will appreciate the training they received in their own club. Good speakers and attentive listeners are an asset to any club, and as citizens they are sorely needed to fill civic positions.

A sense of duty in regard to assisting the community in social duties has its basis in education, for if one is called upon to speak at social functions, he must know his subject and the formalities must be observed. Too often we hear people declining positions as members of committees and as master of ceremonies at socials. This is not a patriotic way of doing things, for usually the tasks fall upon the same person each time instead of them being fairly distributed among the citizens. Young farmers can do their duty by taking these minor positions and thus suiting themselves for major positions when called upon to take them.

A "good neighbour" policy affects everyone in his Dominion, but, nevertheless, I think that if the Young Farmers attend to the other principles of citizenship that I have mentioned, this ideal will just work naturally. One thing can be said about this, and that is there is a great difference between wishing a neighbour success and the actual fact of setting to and helping him. With the shortage of labour at the present time a little help when needed is greatly appreciated by anyone.

One ideal that I have omitted in the introduction, and that is love of one's own country. This is the greatest of all, for here race, religion, breed and type are all gathered together with the one bond. The part young farmers and former young farmers are playing can be seen by the roll of serving members recently seen in the Journal of Agriculture. There is no greater sacrifice than to offer one's life in the defence of one's own country, and by doing this we can show ourselves as true New Zealanders, worthy of the title of "good citizens."

Orchard Diseases

THE results of investigations carried out by the Plant Diseases Division are embodied in the Department's **free** bulletin No. 161. This bulletin deals with the various sprays in common use. their dilution and combination. and sets out spray schedules for apples, pears, stone-fruits and citrus fruits. The treatment and disinfection of tree wounds is also explained. A copy of this informative **free** bulletin may be obtained from the Department of Agriculture at Auckland, Wellington, Christchurch and Dunedin.

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Y.F.C. Field Day at Bluff

A BUSY day for the Young Farmers of the Western Southland districts was Friday, August 27, when a meeting of the Otago-Southland council, the annual field day arranged by the Western Southland district committee, and the inter-club debates were held.

The council meeting commenced at 9.30 a.m. and attracted an attendance of twenty-two Young Farmers and officials. Otago was represented by Messrs. S. H. Saxby (Acting Fields Superintendent, Department of Agriculture), S. R. Whyte (Otago-Southland council secretary) and J. W. Wilson (council member), all of Dunedin. Representatives from South Otago included Messrs. J. Richards (Fields Instructor, Balclutha) and J. Maitland (Warepa). The Dominion President, Mr. T. E. Streeter (of Motukarara, Canterbury), was also present. Discussions concerning post-war activities and education took place. Morning tea was served during the meeting, which closed at 11.20 a.m.

Trip to Bluff

At 11.30 a.m. the field day started, with a party of fifty members travelling by train to Bluff. After lunch at Bluff, the party reassembled at 1.30 p.m. and paid a visit to the meat-preserving works, where the processes of cooking and preserving mutton and rabbits were seen.

Next on the programme was a "mystery visit," which, because of its nature, must remain a mystery to the general public. This was undoubtedly a very popular visit, and all members of the party, at the end of the day, voted it the best of all. The party also inspected the Stewart Island Oyster Canneries, where the oysters from Fouveaux Straits are opened by machinery and then canned. The members were given an opportunity to sample the delicacy. The last visit of the day was to the Southland Cool Stores, where an inspection of the stores and a demonstration of grading both butter and cheese by the Government grader, Mr. Tennet, had been arranged. He pointed out that the quality of New Zealand cheese is considered so high in England that it is all being stored, and other cheeses are being consumed at present.

Debating Contests

The return journey to Invercargill brought the field day to a close, and all members returned to the city expressing appreciation of a good day. In the evening, at 7 o'clock, most of the party reassembled at Elmwood Garden, where the debating was held. Four teams faced the judges, and two subjects were debated. For the first debate, between the Orepuki B and Woodlands teams, the subject was "That men should do the housekeeping on Sundays." The Orepuki A and Wyndham teams debated the subject "That the pioneers worked harder than the farmers of to-day." The judge, Mr. John Tait, expressed appreciation of the good standard of debating, and gave each of the speakers some constructive and welcome criticism. The placings were:—

(1)	Orepuki A	230 points
(2)	Wyndham	226 points
(3)	Woodlands	222 points
(4)	Orepuki B	217 points

After the debates, Mr. T. E. Streeter, Dominion president, briefly addressed the meeting, and was cordially received. Supper was served, and the function concluded.

—*W. L. HARBORD, Fields Instructor, Department of Agriculture, Invercargill.*

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Reports On Club Activities

WESTERN SOUTHLAND.

Orepuki.—W. G. Brown elected chairman for the meeting. One new member enrolled. Awards for dog trials held at Pahia: C. M. Erskine, 1; D. McPherson, 2; A. V. Lee, 3. Two practice debates were held, the subjects being: (a) "That a farm is the ideal place to rear a family"; and (b) "That men should do the house-keeping on Sundays." Speakers: C. Erskine, M. Young, D. McPherson, S. G. Dillon and R. Corkery. Each speaker spoke twice. Sixteen members attended the meeting.

SOUTH OTAGO.

Warepa.—Meetings to commence at 8.30 instead of 8 p.m. on account of spring farming operations. Secretary instructed to procure Y.F.C. badges. Report of Otago-Southland council meeting, the Western Southland annual debating contest, and the visit of inspection through the industries and Port of Bluff, was given by a club member who was a delegate from South Otago. The library secretary, J. Shanks, reported considerable funds in hand, and was instructed to send away a year's subscription to the "New Digest." Mr. Hayhurst, veterinary surgeon, gave a most opportune lecture entitled "Lambing Troubles in Ewes"; and answered a number of questions. Fourteen members were present out of a total of eighteen.

DUNEDIN.

West Taieri.—Delegation from the club to meet the Patriotic committee regarding the running of dances for patriotic purposes. Each member present gave a short talk on some item of general interest. Attendance of twelve members out of seventeen.

NORTH OTAGO.

Enfield.—Talk by the Rev. Fordyce on "Experimental Physiology." The speaker outlined several examples of natural science. Thirteen members present out of twenty-one.

MID-CANTERBURY.

Hinds. — Report on district meeting. A. McKenzie and D. Chisnall appointed delegates to the stock-judging committee. Mr. D. M. Bruce to be asked to judge the impromptu-speech contest. Mr. G. K. McPherson, Department of Agriculture, gave a talk on "Grass Grub, Certified Ryegrass and White Clover Seed, and Serpentine Super." Eight members present out of fourteen. At previously unreported meetings: Debating team selected, consisting of W. Taylor (leader), D. Chisnall and R. Cocks; club debate, "That the Welfare of New Zealand depends more on the town than country" — speakers (affirmative) E. Rhodes, R. Watson, A. McKenzie; (negative) W. Taylor, R. Cocks, D. Chisnall; Impromptu Speeches (judged by popular vote), D. Chisnall, 1; G. Clarke and I. Donaldson, tied for 2nd.

Methven.—Report on concert, sponsored by the club. This was held in the Methven town hall, and was given by the Christchurch Centennial Harmonica Band and concert party. The total receipts were £75/8/6, and expenses £30/8/6. The balance of £45 was handed over to the Methven Patriotic committee. Discussion on Club Pasture Judging Competition. Secretary instructed to communicate with Mr. Bevan, of Lincoln College, in regard to plans for the running of the competition. Interesting address on "Education" by Mr. Stanley Smith, followed by many questions ably answered. Nineteen members in attendance.

CHRISTCHURCH.

Ellesmere.—A welcome extended to a member returned from overseas. Mr. McKay, Department of Agriculture, to be asked to address the next meeting on the subject of "Roots and small seeds." Mr. M. Watson, who has been repatriated from Italy, gave a very interesting talk on "Life in a Prisoner of War Camp." He was accorded a hearty vote of thanks. Seventeen members attended the meeting out of a membership roll of 47.

NORTH CANTERBURY.

Scargill-Omihi.—Report by three delegates on an address they had jointly given at the Trades Hall, Christchurch, on "Nasella Tussock and land deterioration." A visit to the Waikari Flour Mills was arranged, and a very pleasant and instructive two hours were spent there. An address was given by Messrs. McCaskey, Hunt and Black on the steps being taken by the Nasella Tussock committee, and what the county councils intended to do. There were twenty-one members present out of a total of thirty-one.

MANAWATU.

Bunnythorpe. — Discussion on exhibits at Women's Institute Show. Suggested by S. Anderson that the secretary write asking that the classes be made more comprehensive, so as to include mangolds, swedes, turnips, sugar-beet, beetroot, carrots, parsnips, potatoes, marrows and tomatoes. B. Naylor read an extract from the Y.F.C. constitution. Decided that at the next meeting each member should give a short talk; W. Gee to be acting-chairman for the meeting. J. Wood appointed club representative on the Feilding A. & P. Show committee. Address by Mr. W. A. Jacques, of Massey College, on "Tillage." Twelve members attended.

WAIRARAPA.

Carterton.—Question evening. Decided to ask Mr. Jointz, veterinarian, to address the next meeting. Fourteen members present.

Masterton. — One new member enrolled. Arrangements finalised for a dance. Dominion president's annual report read and discussed. Address entitled "Citizenship," by Archdeacon E. J. Rich. Attendance of twelve.

TE KUITI.

Otorohanga.—Discussion on birthday social and dance; decided to hold same early in November, arrangements to be finalised at next meeting. A lecture on "Farm Law" to be given at next meeting by a local solicitor.

WAIKATO.

Cambridge.—Five new members enrolled. The chairman being absent through illness, R. F. Giles was appointed to the chair. The secretary was instructed to write a letter of sympathy to the chairman, G. Goodwin. Privates J. Hyde and P. Shaw, who had been invalided home from overseas, were welcomed and made honorary members of the club in view of their service. They gave very interesting sidelights on their experiences overseas, both in and out of battle. During supper they replied to the chairman's welcome, and expressed their thanks for the honour accorded them. The evening concluded with the singing of "For They are Jolly Good Fellows." There was an attendance of thirty out of a total membership of forty-one. At the previous meeting plans were made for a campaign for secondary school members; it was also decided to pay the Journal subscriptions for members overseas, and to send each of them a cake. G. C. Herbert was elected club delegate to the Cambridge Veterinary Association. Lecture by Mr. Doyle, veterinarian, on "Ailments in pigs." The speaker answered many questions.

BAY OF PLENTY.

Pukehina.—Decided to assist the boys and girls' agricultural club at the Pukehina School, and to start a calf-rearing competition. Talk by Mr. K. Alison on "Grasses." The speaker also exhibited a collection. Eight members present.

Tauranga. — Three new members enrolled. Balance-sheet for past six months presented. Decided to hold a sheep-shearing field day. A very interesting talk was given by Mr. Reg. Mander on his three years of overseas service. Ten members present out of twenty-two.

Te Puna.—Two new members enrolled. Les. Lockhead announced as winner of the club's hay competition. Club to make a donation of £1/1/- to the district committee. Club to have a stall of produce at the patriotic gymkhana to help with district quota. J. Collins to be acting-chairman. Arrangements for club dance. Two remits to be forwarded to the district committee. Address by Mr. Red. Strugnell, of Omokoroa. There were ten members present out of a total of twenty-four. An interesting visit was made to the Tauranga Co-op. Dairy Association's factory, the manager explaining the working of the plant.

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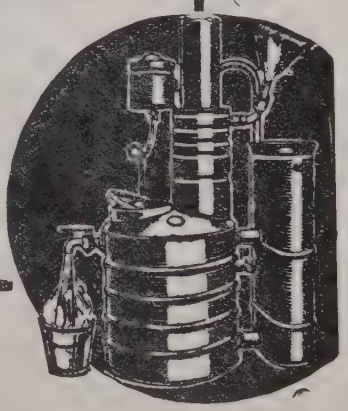

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Health Notes for the Farm

Look Out For Meningitis

Contributed by the

DEPARTMENT OF HEALTH

THERE is no need to be unduly scared by the above headline. But if it does have that initial effect, then it has achieved its purpose—if it does make parents a little more wary, then those four little words will have done some good.

The habit of taking things rather casually is general in this country, and when it comes to health it can often have tragic results. Fortunately, there are signs of a growing health consciousness, but it needs to be developed before it has any real effect.

Meningitis is only one of many diseases for which a look-out must be kept, and it is one of the most dangerous. It is swift in its attack and very often tragic in its results, and it is a terribly deceptive disease. It masquerades under symptoms that might easily be characteristic of a dozen other childhood complaints, and therein lies its deadliness.

Parents, therefore, should be suspicious of any upset in their offspring. In a normal, healthy child these upsets do not occur without some adequate reason. They may be only temporary disturbances such as feeding trouble, or teething, or perhaps a slight cold, that wear off, but on the other hand they might be something infinitely more serious—perhaps meningitis.

Suspect the Worst

By suspecting the worst you are ready for the worst, and that mental approach might mean all the difference between life and death. Take this as an example—an example that probably could be duplicated many times. A healthy, chubby little girl of four went down unexpectedly with a temperature. She was pale and restless and irritable, and the mother decided she had a little tummy trouble, and acted accordingly. After a day or so the child's condition became worse. The neck was obviously a little stiff, and a skin rash appeared. A very worried mother called the doctor, and the small patient was rushed to hospital——but it was too late. Even the magic of sulphonamide drugs was of no avail—the child died. Yet, had that child been treated a few hours earlier, the deadly little germ that pierced the lining of the brain and so caused death would have been checked, and another young and happy life saved.

Meningitis as an epidemic is not frequent; this is extremely fortunate. But it is always amongst us, and every now and again claims a victim. It strikes without warning, and often in the most unexpected places. Children, in whom early diagnosis may be difficult, are usually the victims.

The symptoms, particularly in children under two or three years of age, are drowsiness and crossness; vomiting may occur, and the bowel movements will probably be loose. Mother may be liable to regard it as a gastro-intestinal upset. Then twitchings or convulsions may show up; crying attacks or whimpering, or great restlessness will persist in spite of every attention. A bulging fontanelle—that is the little space not yet closed in the head bones—and neck stiffness are very important signs. Holding the head back is a later symptom, and the important thing is to recognise the disease before head retraction occurs.

Don't Take Chances

If any of these signs are noticed, call the doctor at once—don't delay a second longer than is necessary. Sulphonamide drugs given early will save life; if too late, they may fail.

In older children the disease is a little easier to diagnose. Aching pains in the joints, back, or neck must not be mistaken for rheumatism when they are preceded by headache and vomiting, crossness or drowsiness. And any rash of short duration is definitely a danger signal.

The danger is that these signals go unrecognised, and the preliminary stage is allowed to drag on for days before anything is done about it. Learn to recognise the symptoms early. Don't take chances with your child's life.

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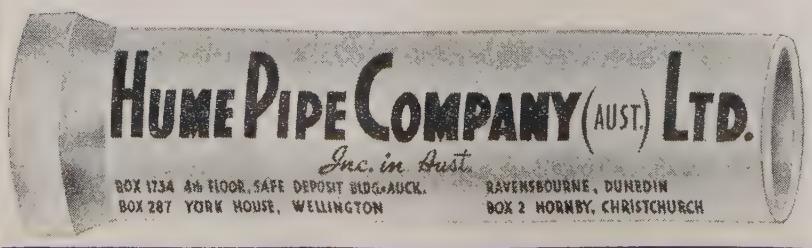
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THE GOOD NEIGHBOUR.

A Dream Come True

HOW I wish you could all see me at this very instant! For I am sure you would say "What! Is that her idea of a dream come true?" Well, perhaps it is not all quite true just yet, but the biggest part of it is, and the rest will come. Now take a peep at me: perched on a packing case, with the typewriter on a trestle table that once housed begonias no doubt, suitcases in careless abandon all round the floor, but before me—and here is my dream that has come true—a view that no artist could paint to perfection.. Yes, we have shifted, and at last I have what I have always wanted —a room with a view.

Last night, before I went to bed, we stood on the broad verandah of this gracious house that is to be our home now, and watched the twinkling lights of Wellington spread before us like stars in a velvet cloak. Reminded me very much of that poem by the Wellington writer, Boyce Bowden, who described Wellington by night as "A glowing heap of jewels in a negro's palm." And as we watched the lights, there was a pink flush over on the eastern hills, and before very long a moon was rising to outshine even the brilliance of the city lights.

And although I felt I had already had more than my fair share of beauty, I awoke this morning to see another picture before me: this time the harbour was wearing a frock of pale blue silk, and the sun was making a golden pathway where the moon had trodden the night before. And right outside my window a cream rose was scenting the air, and behind the house on the hillside there were birds singing in the tall trees that live in the Town Belt just over our garden gate.

I do not know what I have done to deserve all this richness thrust upon me so suddenly, but this I do know: for as long back as I can remember I have longed to have a room with a view, and the view had to be the sea. So here at last is a dream come true. How I wish I could share my delight with each one of you, but I know now the deep peace of trees at night, and the joy of awakening to birdsong. And the joyous part of it all is that although we are so close to the city, it seems to be far away and beyond our almost-country home.

When I left primary school, years and years ago, my headmaster said to me: "Be very careful on what you set your heart, for it will surely be yours." I have tried to remember his words, and in being careful upon what I have set my heart, I have only set it on a very few things that I wanted very, very much. And in some miraculous way the dreams are coming true, slowly, but one by one.

I send you a bouquet of fragrance from our new-found treasures in the garden: a breath of the cream rose outside my window, the scent of a lilac in bloom, the promise of a lily of the valley not yet out, the joy of forget-me-nots intermingling with deep yellow polyanthus, a camellia tree pink with flowers, and perhaps the biggest joy of all: an apple tree in full blossom.

So when the cases are unpacked, and once again my dear familiar treasures are around my rooms, and the dear familiar pictures back in their places on the waiting walls, then I will truly be able to say "Another dream come true."

Mary

HOSPITALITY

Whether my house is dark or bright,
I close it not on any wight,
Lest Thou, hereafter, King of Stars,
Against me close Thy heavenly bars.
If from a guest who shares thy board,
Thy dearest dainty thou shalt hoard,
'Tis not that guest, O do not doubt it,
But Mary's son shall do without it.

—From the Irish.

APPLE BLOSSOMS

Is there anything in Spring so fair
As apple blossoms falling through the air?
When from a hill there comes a sudden breeze
That blows freshly through all the orchard trees,
The petals drop in clouds of pink and white
Noiseless like snow and shining in the light,
Making beautiful an old stone wall,
Scattering a rich fragrance as they fall.
There is nothing I know of to compare
With apple blossoms falling through the air.

DREAMS

YOUR talk about dreams reminded me of a lovely poem I came across the other day called "If the Dream must Die."

"But, if the dream must die, let it die grandly
With deep-voiced organs chanting in chords of flame.
Oh, let there be no thought of a shabby ending,
Nor any shame.
Let it go simply and gallantly into the darkness
That holds forever lost and beloved things—
A star, that leaving the charted paths of heaven
Wide glory flings."

I wonder if any of your readers keep a book in which they write favourite poems or extracts from books they read? I have done this for years, and the book is one of my most precious possessions. So often we lose sight of some beautiful thought, and if we capture it at the moment, we have it for ever.—**Sunny, Nelson.**

"Happy Days"
Lapping ripples against a gleaming hull, and drowsy warmth of Summer sunshine are promises of the peaceful days to come. Until then we must forfeit some of our necessities, so that if you cannot buy your full requirements of Onehunga Blankets please remember that they are to-day on active service with those who need them most. But Onehunga quality is worth waiting for until the days when peace and plenty return to our land.

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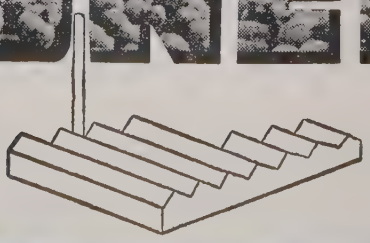

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"YOUNG OR OLD—WHO MAKES THE BETTER MOTHER"?

First Prize:

BEING one myself, I know full well the disadvantages of the older woman as a mother, and here they are:

1. I fuss like an old hen over my pigeon pair. I wrap them up too warmly (it seems as though I shall never get that right), and try to shield them sometimes from life itself.

2. After thirty a woman's vitality is lowered, and temper and nerves are apt to become frayed.

3. The children are inclined to be precocious, and sometimes a worry physically.

4. Before our marriage both my husband and myself had fallen into bachelor ways, and instinctively resented the irritations inevitable in rearing a young family.

5. I am too old to give the children the undoubted advantage of belonging to a big family, and how I'd love to have such a family.

Of course, we have our points. The children are intelligent, strong-willed, and healthy. They want to be "tough." They are intensely interested in my varied experiences before my marriage, and hang on every word.

But I should strongly advise early marriage, for the younger woman has more vitality, can readjust herself better to changes, and is young enough to rear a big family, which for a woman is the most satisfying and worthwhile job in the world.—**Weeping Willow, Waimate.**

Second Prize:

BEING an older mother myself (thirty for my first-born), I naturally know more of that angle than of the younger bias. There are arguments for both sides. The younger girl finds the physical bearing and rearing of children an easier matter (other things being equal); she can grow up with her children, and is still comparatively young, and therefore helpful to her children when their turn comes to marry and rear families. It must be handy to be able to park the family on Gran when going off to town, or to a wedding!

With modern advance in medicine and surgery, however, the older mother has made up practically the whole of her disadvantages on the physical level; more intelligent education and wider interests for women are tending to keep their outlook "young" for a longer period, so that she too has as much chance of being young with her children as her younger sister, and the disadvantage of being considered too old or inactive to help with grandchildren might possibly be regarded by Granny as a convenient safeguard.

So far the balance of argument is equal. The older woman scores, though, in the breadth of her pre-war marriage experience. The longer she has lived a single life—especially in these days when she almost invariably goes outside her home to find work or contacts—the more experience she garners, the wiser and more tolerant she becomes through the increasing breadth of her knowledge, and the easier she becomes to live with. At the same time she is able to sow any wild oats, or in other words have a good time, and is then the more ready to settle down to the love-wrought but firm harness of marriage and motherhood with no regrets for the fun she might have had. —**Hydro, Kaitangata.**

SOME are born with it, some achieve it, and others are hopeless. Some women with no family would be in their element looking after one, and other women sometimes, alas, with large families, should never have been allowed to bring a child into the world. Our civilisation has progressed so far that we can measure intelligence, will the time ever come when we can tabulate the worth of each individual in society, and then add the two together and divide by something so that we can then know for sure who are fit to be parents, and to how many? No more Hitlers when we reach that stage. One young girl tells me that she wants to be married and have six children before she is thirty, so that they can have fun together. She wants to be able to go to parties and dances with them, to go hiking and skating together. Good luck to her! She will rear them carefully, see that they have fresh air, decent sleep, and plain, wholesome, but attractive food, if I can read between the lines, and I hope her plans come true. Then there is the other side of the picture—a silly, frail girl who married at nineteen, carrying a weakling on her hip, while a pale-faced two-year-old runs along beside her. All three need discipline and a wash. They go into the Plunket Room, and I pity the nurse. She knows that the dummy is popped in when mother wants to finish a novel, she knows that meals are irregular and unsatisfactory, but she goes on hoping. Not that I find some of the older mothers any brighter in coping with children's requirements though. Smother love often replaces mother love with them, and as the child grows older they feel old themselves, and out of touch. There are just as many silly young mothers as silly old mothers. Age has little to do with it. The better mother is the woman who will give only the best to her little ones, and let those things which interfere with her home life go by on most occasions.—**Rainbow, North Canterbury.**

WE all like to remember our Mother as our best friend and companion, the one who shared our interests, who understood our changing moods, who was patient and sympathetic with our youthful follies, helping to guide us through the dangerous stages with tact and wisdom born of experience which she had not grown too old to remember. Young married people have been heard to say that they intend to enjoy themselves before settling down to have a family. Little do they realise that life's joy in the fullest sense is bound up in that family — the lasting love-link with each other — and that it is a much happier thing to grow up with one's children while one still possesses the qualities of tolerance, understanding, sympathy and patience than to be old and weary while they are still young, causing many a regretful sigh; "If only I were younger."—**Seaview, Cheltenham.**

This has been a really interesting competition, and the scales are almost even when I add up the sum total of your entries, but I think they have turned at the end in favour of the younger mothers. So many interesting and really good entries, that I could use pages of them without repeating much of the advice and ideas they have contained, but I have had to choose only the very best for publication.

First prize this month to "Weeping Willow" of Waimate for an excellent entry, and second to "Hydro" of Kaitangata. Congratulations to you both for really worthwhile essays.

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SPEEDEE APPLIANCES ARE FASTER!

MENDING MEN'S SUITS

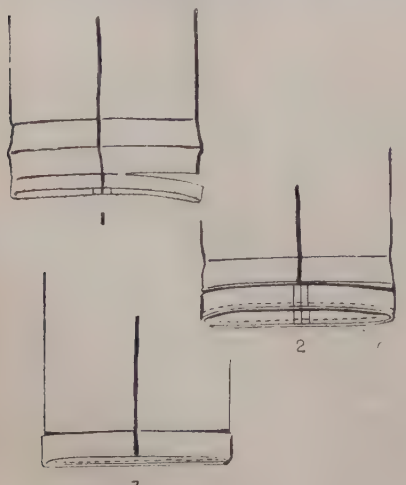
EXTENDING the life of clothes is important today. Trousers can be made to last longer if you follow the suggestions in this article.

TROUSER REPAIRS.

WORN TROUSER CUFFS. — Many suits still have cuffs that can be used to make trousers give longer wear. Cuffs may be repaired five or six times before trousers are noticeably shortened.

Cuffs are about 1¾ inches deep and the facing turned up inside the leg about 1 inch deep. Starting with a pair of trousers with plain cuffs you can make the following repairs one after another . . .

FIRST REPAIR — PLAIN CUFF. — Pick out the tacks at the side of the cuff. Rip open the lower edge.



1. With the cuff unfolded you will see three sharp press creases. Cut off the cuff exactly on the line of wear, which is the lowest crease. If the wear is only on the very edge, no extra cutting will be necessary. If the edge is worn up into the inside hem, trim it so you have a straight edge, or so you can make a straight seam.

So little is taken off in the seams that the trousers are not noticeably shortened.

2. Seam the piece you have cut off back to the pants leg—with right sides of material together. Take a very tiny seam, no more than one-eighth inch wide. Do not press this seam open. Instead, press both sides of the seam towards the facing.

Fold the cuff back in place and baste so that the new seam line is held just inside the trouser leg. Press to sharpen the creases. Now turn down the cuff and stitch by machine on the facing side next to the new seam line. Machine-stitch again to hold the top edge in place. Hand stitching here wears out too quickly. Put a wool or tape guard in for longer wear.

3. Turn the cuffs up and tack them at the sides. Do this by hand from the inside or on the right side by machine. To tack by machine, set the machine needle in the seam line one-half inch above the bottom of the trousers. Stitch up and beyond the cuff top one-half inch.

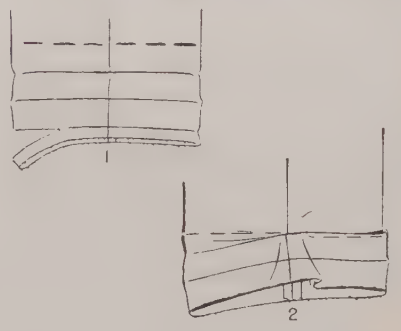
SECOND REPAIR—FRENCH CUFF. Rip out machine stitching put in with the first repair. Open the trouser cuffs as before.

1. There will be three sharp press lines. Cut off along the worn seam line at the bottom. With tailor's chalk strike a line 1¾ inches above the top crease. That marks where the top of the new cuff must come.

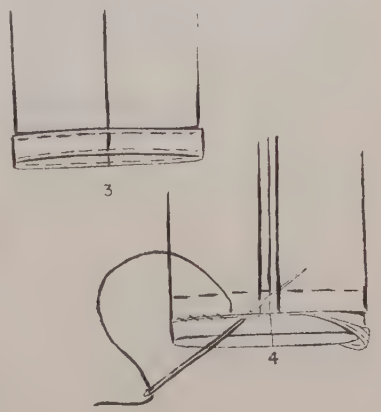
2. Fold, then baste, along the line of the top crease. Baste this fold to the chalk guide line just made.

3. Fold and baste along the second press line to form the lower edge of the trousers. Steam press to sharpen these folds and to show where to turn under for the inside finish.

4. Turn in the cut edge so that it just meets the newly made inside fold.



If it should lap, a ridge will show through the middle of the cuff. Join the two folds with slip stitches, taken closely enough that they will not catch in wear.



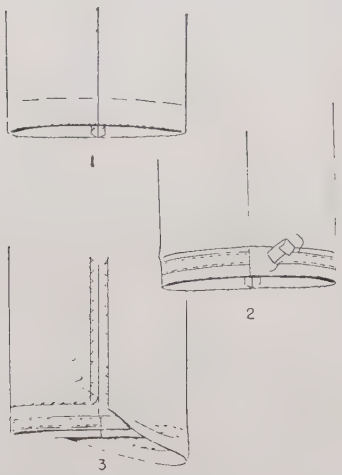
Tack or machine-stitch the cuffs in place and give a final press. Then protect the lower edge with a wear guard—it's easier to sew it on by hand for this type of cuff.

THIRD REPAIR—FRENCH CUFF.—Make this repair in the same way as the first by taking the line of wear out in a seam. Rip open the French cuff, cut along the line of wear, seam the piece back to the leg. Then turn and stitch by machine so the new seam is barely inside the trousers—not on the edge. Finish off in the same way as before the repair was made. It may be necessary to press out the old fold so as to get a perfectly smooth fit.

FOURTH REPAIR—NO CUFF.—Rip out the French cuff and finish the leg without a cuff.

Turn down the top crease of the French cuff to form the lower edge of the trousers. Steam press to take out all other creases.

1. Mark and trim for a 1¾-inch hem.



2. Before the hem is stitched in place, sew on the wear guard as illustrated.

3. Then hem the trousers securely by hand. Be careful that no stitches show on the right side of the trouser leg.

FIFTH REPAIR.—Open the hem, take off the tape, and cut along the worn edge. Seam out the worn part as in the first repair. Stitch the wear guard on again by machine, then hem by hand.

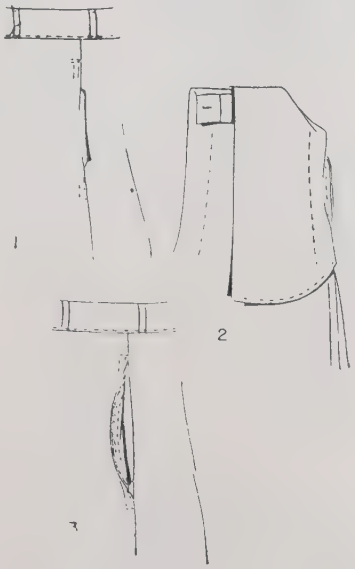
SIXTH REPAIR.—Repeat fifth repair if the trousers are long enough to permit it.

FRAYED POCKET EDGES.

SLIGHTLY FRAYED.—1. If the edges of side pockets are worn but not along the full length of the opening, rip the inside facing apart from the pocket edge a little beyond the worn part.

If the wear is slight, you need only turn in the worn edges, slip stitch them together and finish the same as before.

2. If the edges are more worn, trim off the worn parts of both the facing and the pocket edge, but be very careful to keep a straight line. Reseam the facing to the pocket edge by machine, taking a very tiny seam.

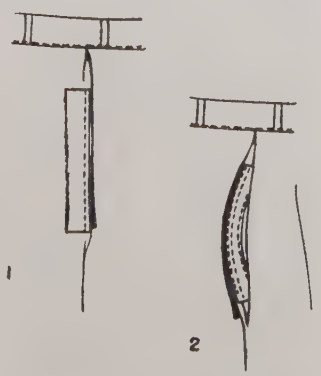


3. Roll the seam line so it is barely inside the pocket opening, then baste and press.

Stitch the pocket edge by machine once or twice, depending upon how it was finished in the first place.

ENTIRE EDGE FRAYED.—If the pocket is worn along entire edge—

Cut the bars at each end and rip the seams open a little, just above and below the pocket. Rip the facing apart from the pocket mouth. Trim off the worn part, being careful to keep a straight line, then reseam. If the facing is worn deeply, rip the other side of it away from the cotton pocketing and turn that side out to the pocket edge.

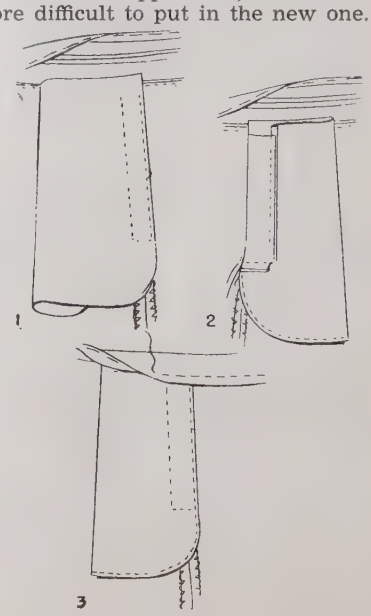


1. Reseam the facing to the pocket mouth with right sides of the two pieces together.

2. Turn facing back into the pocket with the seam line just inside. Baste, press, and stitch as it was before you ripped it. Resew the seams above and below the pocket. Then bar pocket ends by stitching back and forth to strengthen them.

TO REPLACE INSIDE POCKET.—First turn trousers inside out and rip out stitching that holds pocket to waist band. Cut a paper pattern for the pocket. Mark the side that is to be laid on the fold when you cut the new pocket. Allow about three-eighths inch for seams when you cut.

Cut off the old pocket next to the two wool facings just inside the pocket mouth. This leaves in some of the old pocketing that is stitched back of the wool facing. If this part of the old pocket were ripped out, it would be more difficult to put in the new one.



1. Turn under the seam allowance along one side of new pocket. Baste and stitch it back of the wool facing, over the old pocketing, as illustrated. French-seam lower edge of pocket and retrace the stitching at corners.

2. Smooth and pin in place the other side of the pocket—the side that lies next to the trousers. Pin this along the edge of the other wool facing. It will be necessary to trim off or turn under a little more of the pocketing on this side. Baste, and stitch twice by machine.

3. Slip the top of the pocket underneath the waist band, then stitch by machine from the right side. Use dark thread on the spool and white in the bobbin.

This article, "Mending Men's Suits," by C. L. Scott and A. F. Hagood, is reprinted from a bulletin issued by the United States Department of Agriculture.

(To be continued).

Stains shorten the life of Clothes and Linens.

STAINS are really irksome things—they can ruin your best frocks in a few seconds, and often it is only lack of knowledge that prevents the stain from being removed, thus restoring the frock to its former beauty. Here are some hints we have gathered up for you in the hope that they may prolong the life of your clothes and also your household linen, a very necessary factor today with shortage of materials.

Too much emphasis cannot be laid on the importance of applying the stain removers while the stain is still fresh, for usually it is much more difficult to remove an old stain than a fresh one. Changes in the character of the stain, brought about by drying, exposure to air, washing, ironing, or in other ways, often make it necessary to use chemicals in removing old stains, whereas in many cases much simpler methods are successful if the stains are treated when fresh.

The nature of a stain should be known if possible before attempting to remove it, since this determines the treatment to be adopted. Moreover, if an unsuitable stain remover is used, the stain may be "set" so that its removal becomes difficult or even impossible. For instance, if hot water, which easily removes most fresh fruit stains, is applied to stains containing protein, such as stains of milk, blood, eggs, or meat juice, it coagulates the albumen in the fibres of the cloth and makes it extremely difficult to remove. Similarly soap which aids in the removal of grease spots, sets many fruit stains.

Care With Acids

The kind of fabric upon which the stain occurs also should be known. The method of treatment adopted depends as much upon the nature, colour, weave, finish and weight of the fabric as upon the kind of stain. Cotton and linen are destroyed by strong acids, and attacked to some extent even by weaker ones. Concentrated acids should therefore never be used in removing stains from these fabrics, and if dilute acids are used they should be neutralised afterwards with a suitable alkali or removed by thoroughly rinsing, otherwise the acid may become concentrated on drying, and destroy the fibres. Generally speaking, alkalis do not attack cotton or linen fabrics to the extent that acids do. The damage to fabrics due to the careless use of strongly alkaline soaps, washing powders, washing soda, etc., is well known to the housekeeper.

Wool and silk, being more delicate than cotton and linen, require more careful treatment. The use of very hot water must be avoided, since it turns both wool and silk yellow, shrinks wool, and weakens silk and injures its finish. The only alkalis that should be used in laundering or removing stains from wool and silk are the milder ones like borax, or dilute solutions of ammonia. Acids, with the exception of nitric, which weakens and turns the fibres yellow, do not attack wool and silk readily.

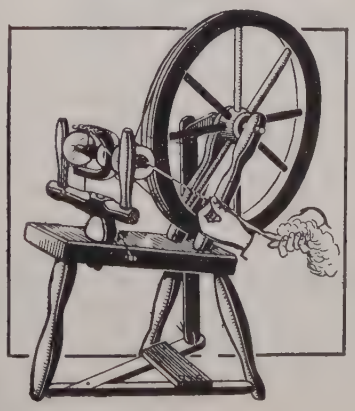
Mixed Fibres

In general, it is more difficult to remove stains from wool and silk than from cotton or linen. In removing stains from materials made from two or more kinds of fibres, such as silk and cotton mixtures, the effects of the stain removers upon all of the fibres should be considered. No chemical should be used which would injure the most delicate of the fibres present. It is also more difficult to remove stains from coloured than white materials, for the reason that most of the bleaching agents which must be used to remove persistent stains are likely to destroy the colour of the material as well.

Ordinary laundering, used frequently as a method for removing stains, should be done as follows. First soak the stained portion in cold or lukewarm water, rubbing the stain with a neutral soap if necessary. Follow this by thorough rinsing in clean water, after which the article may be laundered as usual. Use this method only for cotton and linen (white or fast colours) and the so-called wash silks and washable woollens. If the materials are delicate sponge them.

Sponging is applicable to all fabrics, but especially to delicate fabrics or colours which ordinary laundering might injure. Spread the stained article on a flat surface in a good light, and beneatn the stain put a cloth folded into several thicknesses, or some clean, white blotting-paper, to absorb the superfluous liquid. Change the pad for a fresh one as soon as it becomes soiled. Sponge with a clean,

The ASHFORD SPINNING WHEEL



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on lintless cloth, preferably of the same material as that stained, and renew it as frequently as may be necessary. Lay the stained material with the wrong side up, and apply the water to the back, so that the foreign substances can be washed from the fibres on to the pad without their having to pass through the material.

Use of Chemicals

Chemicals should not be used until water or laundering has been tried, for they attack the fibres of the cloth as well as the stain. There are a few common chemicals which are necessary in removing some stains, and these should be kept in every household. A good plan is to have a small cupboard in the laundry where these chemicals may be kept, together with

SMART ONES PLAY A WAITING GAME

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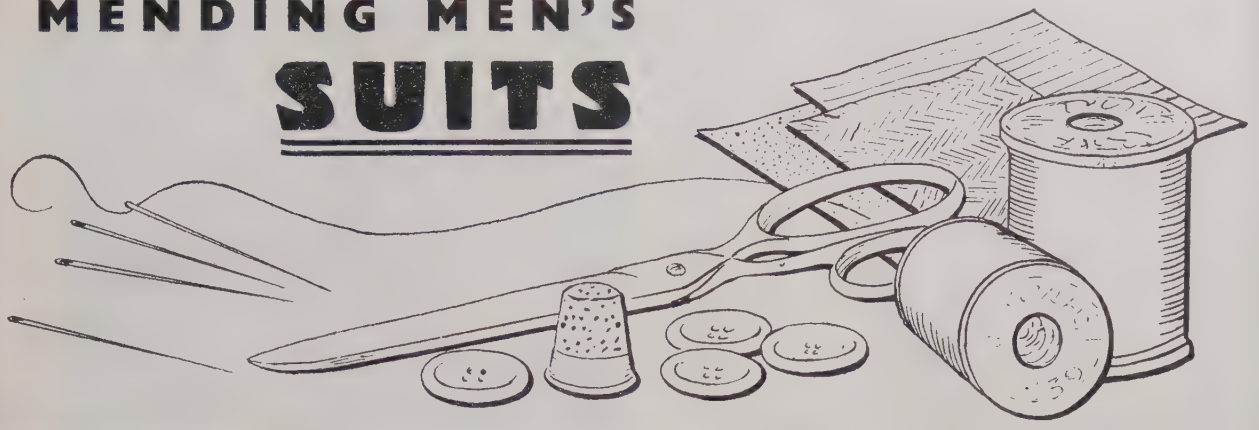


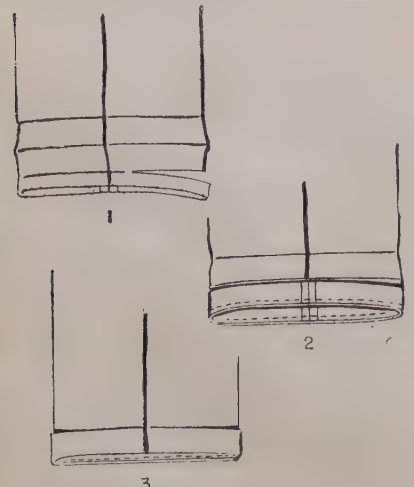
EXTENDING the life of clothes is important today. Trousers can be made to last longer if you follow the suggestions in this article.

TROUSER REPAIRS.

WORN TROUSER CUFFS.—Many suits still have cuffs that can be used to make trousers give longer wear. Cuffs may be repaired five or six times before trousers are noticeably shortened.

Cuffs are about 1¾ inches deep and the facing turned up inside the leg about 1 inch deep. Starting with a pair of trousers with plain cuffs you can make the following repairs one after another . . .

FIRST REPAIR—PLAIN CUFF.—Pick out the tacks at the side of the cuff. Rip open the lower edge.



1. With the cuff unfolded you will see three sharp press creases. Cut off the cuff exactly on the line of wear, which is the lowest crease. If the wear is only on the very edge, no extra cutting will be necessary. If the edge is worn up into the inside hem, trim it so you have a straight edge, or so you can make a straight seam.

So little is taken off in the seams that the trousers are not noticeably shortened.

2. Seam the piece you have cut off back to the pants leg—with right sides of material together. Take a very tiny seam, no more than one-eighth inch wide. Do not press this seam open. Instead, press both sides of the seam towards the facing.

Fold the cuff back in place and baste so that the new seam line is held just inside the trouser leg. Press to sharpen the creases. Now turn down the cuff and stitch by machine on the facing side next to the new seam line. Machine-stitch again to hold the top edge in place. Hand stitching here wears out too quickly. Put a wool or tape guard in for longer wear.

3. Turn the cuffs up and tack them at the sides. Do this by hand from the inside or on the right side by machine. To tack by machine, set the machine needle in the seam line one-half inch above the bottom of the trousers. Stitch up and beyond the cuff top one-half inch.

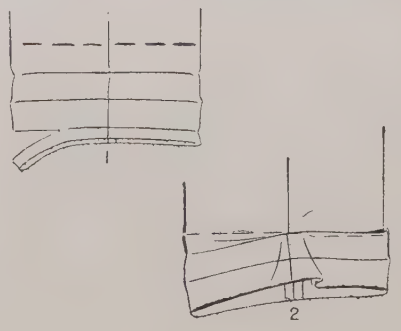
SECOND REPAIR—FRENCH CUFF. Rip out machine stitching put in with the first repair. Open the trouser cuffs as before.

1. There will be three sharp press lines. Cut off along the worn seam line at the bottom. With tailor's chalk strike a line 1¾ inches above the top crease. That marks where the top of the new cuff must come.

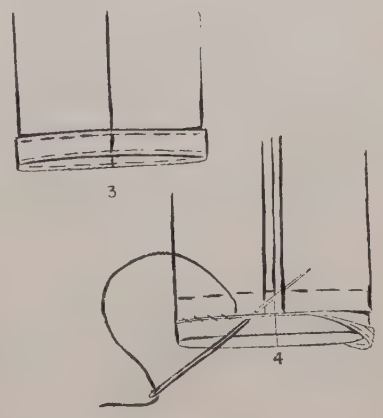
2. Fold, then baste, along the line of the top crease. Baste this fold to the chalk guide line just made.

3. Fold and baste along the second press line to form the lower edge of the trousers. Steam press to sharpen these folds and to show where to turn under for the inside finish.

4. Turn in the cut edge so that it just meets the newly made inside fold.



If it should lap, a ridge will show through the middle of the cuff. Join the two folds with slip stitches, taken closely enough that they will not catch in wear.



Tack or machine-stitch the cuffs in place and give a final press. Then protect the lower edge with a wear guard—it's easier to sew it on by hand for this type of cuff.

avoided in treating unknown stains until after other substances have been tried, since hot water will set many stains and make their removal more difficult.

Bloodstains

The colour of bloodstains is due to the hemoglobin, a red colouring matter of the protein nature which contains iron. Since all proteins are coagulated by heat, hot water should never be applied until the protein has been removed. Remove bloodstains by soaking in cold or lukewarm water, or by soaking the garments in a solution of two tablespoonfuls of household ammonia to one gallon of water. For old stains, ammonia is more satisfactory. Raw starch, mixed with cold water to a paste, is efficient for stains on thick materials, such as flannel and blankets, which cannot be conveniently soaked in water. Apply the paste thickly to the stain, and brush it away when it becomes dry. Repeat the application until the stain is removed.

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Competitions

November:

What a stirring of childhood memories is going on because of this competition! Surely you remember what it was? Well, here it is again—"Childhood Recollections." And it closes on December 15th, so don't be late with your entry.

December:

I know you will think when you first read the title of this competition, "Why, that is a strange subject!" Well, perhaps it is, but I am sure it is going to be most interesting. Now, here is what I want you to write me about for the next competition: "Smells I have Smelt." And please don't forget that it includes unpleasant smells as well as sweet smells. I think it is going to be fun, so just write down the unusual smells you have sniffed in the past, and let's have them. Two prizes—first 10/- and second 5/-, and the competition closes on January 15th, 1944.

"MARY,"

C/o "Journal of Agriculture,"
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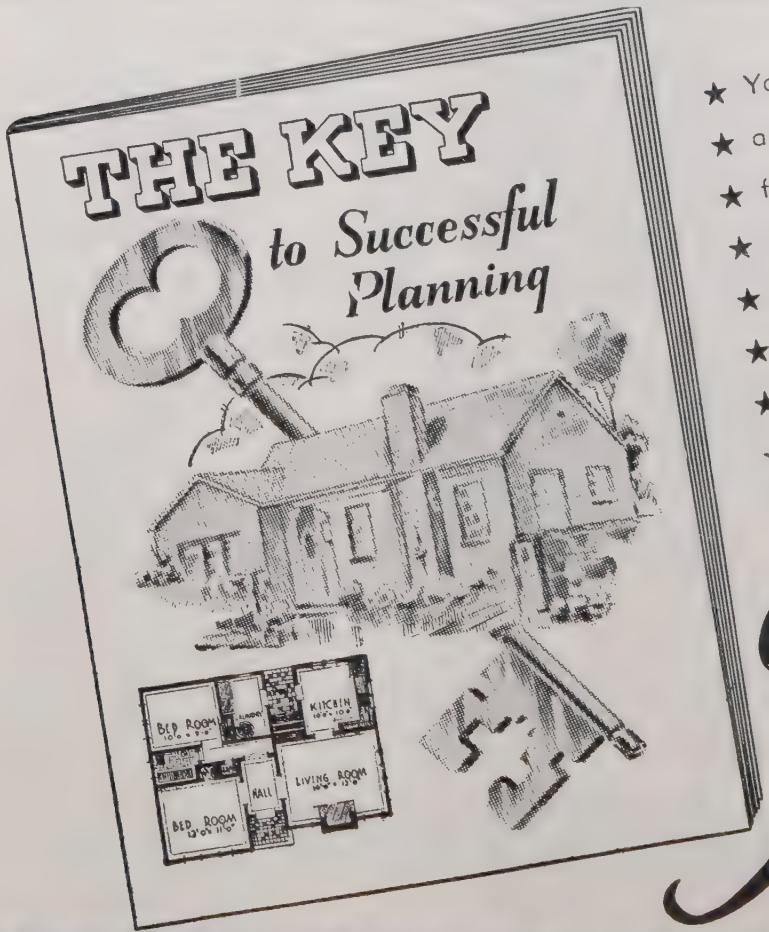

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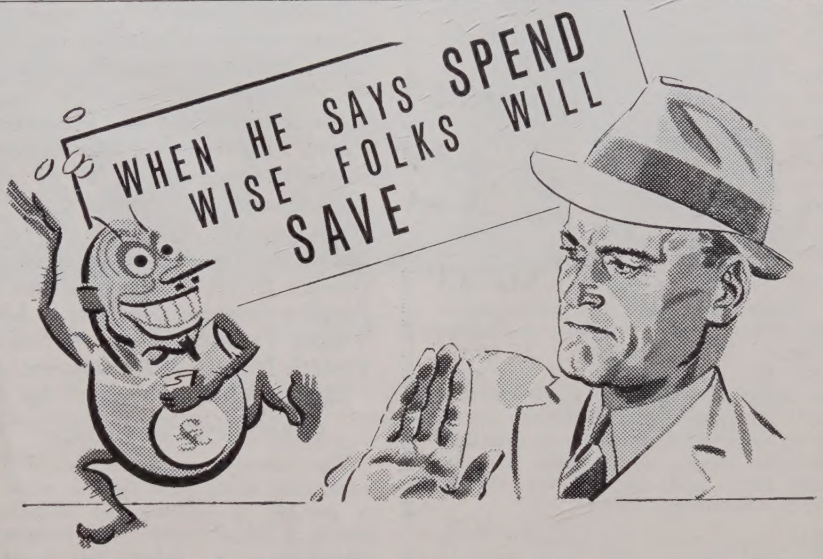
Mary's at - Home -

I THINK it is lovely to read of the everyday things that interest other people. A book I am very fond of picking up is "If I Open My Window," by Rita Snowden. She has a happy knack of finding a spiritual meaning in just common, everyday happenings, and that is what we farmers' wives need; in fact, not only farmers' wives, but every woman. The verse you quoted in "Let's Greet Spring" is one my mother keeps in the front of her Bible. For the sake of our boys we must be up and doing, carrying on for them until they return, or, if they are called to higher service, try and complete their tasks.
—Effie, Murchison.

I WAS very interested and comforted to read Tiggety Boo's paragraph in the Journal about concentration, or rather the lack of it. For some time I have found myself forgetting most important things, until something unexpectedly jolts my memory, and then alas it is often too late. I had thought it must be because I am so much alone in the backblocks, but evidently I have not this trouble on my own, and can blame it on to the strenuous aud overcrowded times through which we are passing. So many things to do and to think about: our boys overseas giving their all for our sakes; our kinsfolk in the Motherland facing up to all kinds of dangers and carrying on amidst them all, and ourselves here at home doing our bit, and planning to welcome our boys home to something better than they left. Our armies, air force and navy are doing great deeds, our factories are working all out to produce munitions, but all their efforts will be in vain without God's guidance. Let us have faith and trust in God's promise, "All things are possible to him that believeth." And so a sure victory will be ours. What then:

"We are not here to play, to dream, to drift;
We have hard work to do, and loads to lift;
Shun not the struggle, face it, 'tis God's gift;
Be strong."
—Effie, Murchison.

TODAY, for the first time since we came here I have been in the garden. It was really too wet to work, but the sun was shining, and the weeds growing, so out we went, the boys and I. Trevor just loves helping, while Peter sits in his pram and smiles. He is the happiest babe I have ever seen, blue eyes, a laughing mouth, and red hair, which alas is not going to curl. Such a contrast to Trevor's black hair and huge, brown, solemn eyes. He smiles now and again, and laughs sometimes, yet he always seems happy. Today I started to move some starved primroses from a bank which never sees the sun, and I am making a border round the garden with them. Pale cream, deep cream, yellow, and a reddy pink one. I hope to have a good show next year. I found the first piece of forget-me-not out today, and how I longed for a spray of lily of the valley, for to my mind they always seem to go together. I planted some clarkia and candytuft seed, and thought the rain had drowned them, but to my surprise they have come up again. I hope to get some petunia plants next month. I will only get "Rose of Heaven" because they make such a show and last so long. The house is full of daffodils; they came from the cow paddock. Since we arrived in June I have only seen a woman once, with the exception of two trips to town, but have



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been too busy to miss them.—**Biddy-Jan, Cheviot.**

I OFTEN think, Mary, what a lot of pleasure you give other folk through your pages. Although I don't write you very often, I have found your pages create a new interest. Sometimes while I am working my mind is dwelling on your competitions, and although these thoughts never materialise on paper, they are often helpful to me. Through your pages I have made penfriends—people living in different localities, whose work and interests are the same as mine—and we exchange ideas, thus helping to unite us in one great family.—**J.F., Otara.**

THANKS to Tiggety Boo for her help, and to those others who also wrote—it does help! The dear horses got my barbery, but I can try again. Dear patient husband has taken an hour, ill-spared from his own jobs, to put an electric fence round the "taboo" areas so the horses won't find it so easy next time. And the daffs I planted out are up to expectations, so I feel that something is achieved. But the vege garden, that prosaic but necessary thing, is all behind because of the season. However, it's a better day today, so here's hoping.—**Hydro, Kaitangata.**

I AM looking forward to what the others have to say about your competition for young or older mothers. Thank goodness I didn't marry till I was thirty. I wouldn't have minded having the children, and more of them, earlier, but to have had to cope with farms and animals, especially lambs, and tractor drivers, would have been beyond my simple powers.—**Rainbow, Oxford.**

MAY I join your "At Home"? I do enjoy your pages, and Dad is not the only one whose eyes sparkle when the Journal arrives. E.G., I too am very interested in kitchen gadgets, and when I arrived from Australia several years ago, with ultra modern equipment, many were the envious eyes that rested on pastry-cutter, fish and beetroot servers, fancy cake tins, etc. Here is a verse which we should all remember:

"Yesterday has passed, forget it;
Tomorrow never comes, don't worry,
Today is here, use it."

—**Young Mother, Nelson.**

HOW do I arrange my household duties to allow more time for the farm? Well, it all depends upon the weather. On wet days I endeavour to do all the mending and sewing, and I try, too, to fill my cake tins with good keeping cakes and biscuits. My biggest problem in the day's work is to plan a pudding—somehow it has always been a worry to me to think up something fresh for each day, so I find it saves mental strain if I can think out and if possible prepare the pudding the night before. Then, too, on breadmaking days, it only seems half the work if all ingredients are placed on the rack the night before. Next day with everything warmed the bread works quickly, and can be out of the oven before midday, thus leaving a free afternoon for the out-of-doors. I may not be so methodical as some women, but I find that by letting the weather decide my day's work I get as much work done, if not more, than those who plan to do certain things on certain days.—**Fruffy, Te Awamutu.**

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The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

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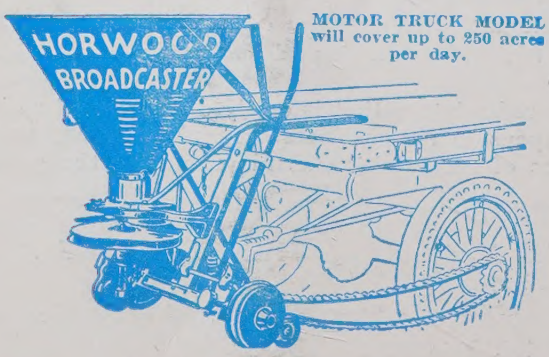

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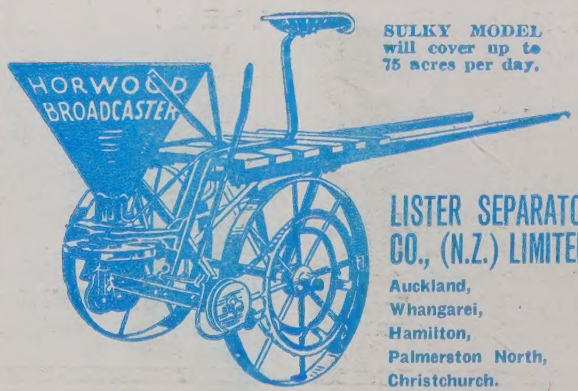

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